

**UNIVERSITY OF KWAZULU-NATAL**

**Alignment of IT and business strategies in Small and Medium-Size  
Enterprises in the Eastern Cape Province**

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**School of Management, Information Technology & Governance  
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## DECLARATION

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## ABSTRACT

In today's business environment, leveraging Information Technology (IT) is of key importance as it helps organisations improve their performance. However, to achieve this, companies must ensure that their IT and business strategies are aligned.

The fundamental goal of aligning IT and business strategies is to ensure that IT capability supports, enables and leads business strategy where appropriate. Alignment explains the degree to which the business plans, goals, and mission support, or are supported by their IT complements (Reich & Benbasat, 1996; Walter, Kellermanns, Floyd, Veiga, & Matherne, 2013). In this, alignment develops into a relationship where business and IT functions adjust their strategies simultaneously. Such alignment can improve business performance. Importantly, large amounts of research conducted in this area focus on large organisations, particularly in developed countries. Yet little is known about the subject in SMEs especially in developing countries.

This study investigates the alignment of IT and business strategies in SMEs in the Eastern Cape Province. A survey methodology was employed to collect data, with a questionnaire as a tool. Forty-two questions developed from four main questions: the state of communication, the state of IT metrics, the state of IT business planning, and the state of alignment practices. According to data obtained from the Border-Kei Chamber, at the time of data collection, there were one hundred and seventy-three SMEs registered with the organisation. However, from that population, one hundred and twenty-eight questionnaires were filled, returned and analysed. The results showed significant agreement that there is communication between IT and business strategies in SMEs, on Metrics and on IT Business planning. However, pertaining the use of alignment models and alignment practises, there was a significant disagreement.

The study recommends that SMEs should create platforms to educate IT personnel about the business; more work on value metric is required. Participation of IT in business strategic planning should be encouraged. It is recommended that SMEs look into alignment model/s that can be used to support how IT planning/ investment, managing and governance of IT is done.

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# CHAPTER 1

## INTRODUCTION AND RESEARCH DESIGN

### 1.1. Introduction

It has become clear that information technology (IT) improves organisational ability to perform in this extremely competitive global market place of the 21st century (Uçaktürk & Villard, 2013; Wu, Straub & Liang, 2015). However, IT performance can be realised only if IT and business alignment is achieved by the organisation (Kohlborn, Mueller, Poeppelbuss, Roeglinger, Brocke, Schmiedel, Recker, Trkman, Mertens, Viaene & Stijn, 2014).

Alignment of IT and business is a vague concept (Ofe, 2013). It deals with different types of alignment: alignment between IT and business strategies also is known as strategic ITbusiness alignment (Bařna, Ansias & Castiaux, 2008), structural alignment, information system alignment, Cross-Dimensional alignment, and Alignment mechanism (Sabherwal, Hirschheim & Goles, 2001). However, majority of studies have emphasised that organisations should focus on achieving Alignment of IT and Business strategies in order to derive maximum benefit from IT e.g. competitive advantage and enhancing performance (Levy, 2000; Luftman, 2007; Luftman, Banker, Hu & Pavlou, 2011). Likewise, this study focuses on alignment of IT and business strategies. Alignment of IT and business strategies explains collaboration with IT and business strategies. The concept deals with the incorporation of IT strategy and business strategy with the purpose of attaining a sustainable competitive edge (Evans & Neu, 2008). A detailed definition that embraces 'planning' is explained as the level to which the organisation's IT and business plans, mission, and goals support each other (Walter *et al.*, 2013). The definition covers how both IT and business strategies are, should, or could be aligned with each other (Luftman, 2004).

For 20 years, the concept has received attention from practitioners and academics (Alyahya & Suhaimi, 2013). Senior executives have been troubled by strategic IT-business alignment for the past 30 years (Gerow, Thatcher & Grover, 2015). Consequently, research on alignment of IT and business strategies has been documented (Alyahya & Suhaimi, 2013). However, a vast amount of research focused on large organisations, particularly in developed countries. In developing countries, little is done on the subject, particularly in

small and medium-size enterprises (Alyahya & Suhaimi, 2013, Cragg, Tagliavini & Mill., 2007).

The significant role played by SMEs in growing the economy, job creation and promoting innovation in both developing and developed world economies, is well acknowledged (Adaileh, 2012; Sharma, 2011; Kommission, 2005). In South Africa, a part of the world economy and a developing country, SMEs presently contribute 52 to 57 % of the country's Gross Domestic Product and 60 % towards job creation (SARS, 2015).

The next section presents the problem underpinning this research. The research questions and the objectives will be presented. The section will further present the research design and the focus will be on how the literature review was conducted. The research instrument used is described, how collection of valid data was ensured, and how data collection and analysis has been done.

## **1.2. Problem Statement**

Information technology (IT) has long been acknowledged as one of the critical elements for an organisation to improve its effectiveness (Ciborra, 1997), efficiency (Johnson & Lederer, 2010), competitiveness and innovation (Avison, Jones, Powell, & Wilson, 2004; Kalkan, Erdil, & Çetinkaya, 2011). Yet, simply investing in contemporary IT cannot guarantee the realisation of these benefits to an organisation. Value realisation depends on how IT is managed (Carr, 2003a; Hussin & Suhaimi, 2011).

The key issue is to know under which conditions organisations are able to derive value from their IT investments (Kohli & Grover, 2008). These arguments are in line with Gattiker and Goodhue (2004) who posit that not all organisations make investments achieve higher performance. Therefore, IT benefits can be achieved if the organisation's IT and business strategies are in tandem (Avison *et al.*, 2004; Kalkan *et al.*, 2011; Ciborra, 1997; Thomas Kohlborn *et al.*, 2014; Johnson & Lederer, 2010b; Henderson & Venkatraman, 1993b; Almajali & Dahalin, 2011).

The concept that the Alignment of IT and business strategies for business performance is significant, has received repeated consideration from both practitioners and academics during the last twenty years (Alyahya & Suhaimi, 2013). From 2003 to 2008, the subject was rated first among management concerns (Lee, 2011). Similarly, from 2003 to 2010,

the concept was repeatedly rated among the top ten management concerns, (Luftman & BenZvi, 2011; Silvius, 2014). Nonetheless, a large amount of research focuses on large organisations, particularly in developed countries (Alyahya & Suhaimi, 2013, Cragg *et al.*, 2007a). Even research on alignment models and frameworks that are used focuses on large organisations (Alyahya & Suhaimi, 2013; Zhou & Zhang, 2014). Although SMEs contribute significantly in most economies (Olutoyin & Flowerday, 2016) for example, researchers argue that SMEs contributes 75% of employment in developing economies (Apulu & Ige, 2011), SMEs are under pressure (subject to globalisation, increased competition and market convergence) to remain profitable, and therefore are making significant IT investments to improve their business processes (Olutoyin & Flowerday, 2016). However, there is not much research on Alignment of IT and business strategies (Alyahya & Suhaimi, 2013; Silvius, 2009).

In view of the fact that not much research has been conducted exploring the alignment of IT and business strategies in the context of SMEs in developing countries, conducting research in the context will help to get an understanding of how SMEs should align their IT and business strategies. Therefore, this study seeks to determine the current state of alignment between IT and business strategies in SMEs in developing countries, as well as in practices used by SMEs to align IT and business. However, due to time and financial constraints, this research will be limited to the Eastern Cape Province in South Africa.

### **1.3. Research Questions**

The fundamental goal of the study is to determine the current state of alignment between IT and business strategies and alignment practices. To study the current state of alignment between IT and business strategies as well as alignment practices, the model of the study was adapted from Luftman's (2000) alignment maturity model (see figure 1.5). Based on the model, the following research questions were derived:

- 1) What is the current state of communication between IT and business strategists in SMEs?
- 2) What metrics are put in place to measure value contributed by IT in SMEs?
- 3) What is the current state of IT business planning for SMEs?
- 4) What practices (if any) are used by SMEs to manage alignment of IT and business strategies?

#### 1.4. Research Objectives

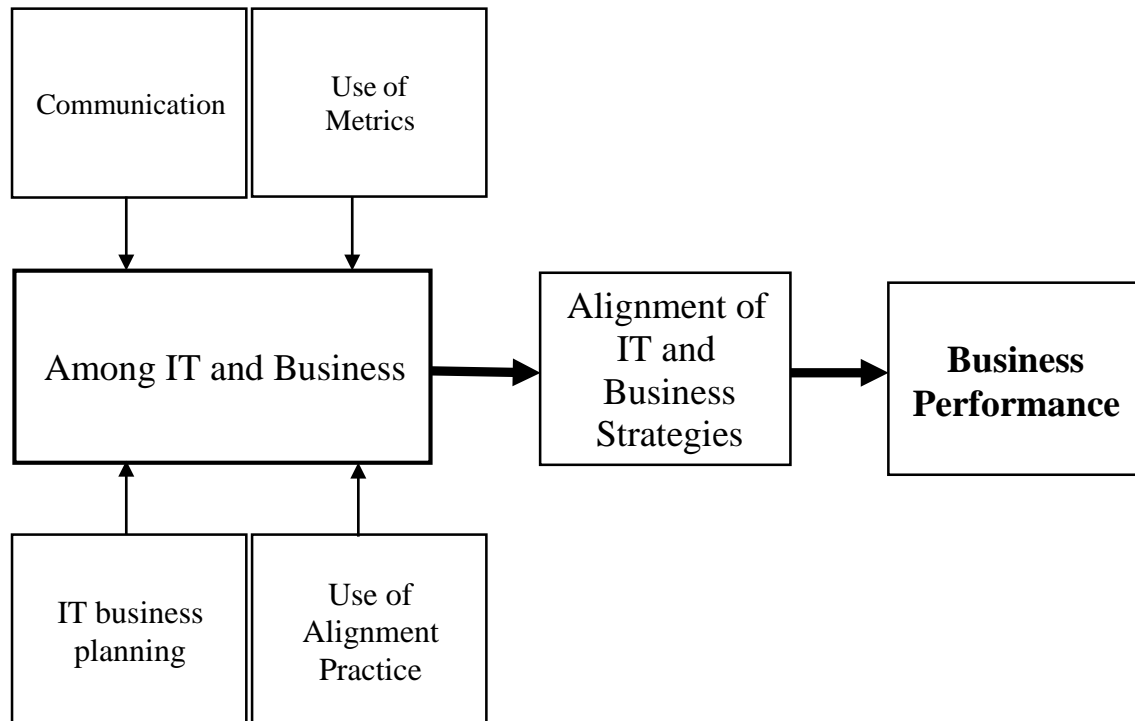
Research objectives are designed to help the researcher answer the research questions.

The research objectives of the study were:

- 1) To determine the current state of communication between IT and business strategists in SMEs;
- 2) To identify metrics put in place to measure value contributed by IT in SMEs;
- 3) To determine the current state of IT business planning in SMEs;
- 4) To determine practices (if any) that are used by SMEs to manage alignment between business and IT strategies.

#### 1.5. The Theoretical Framework

The framework used in this study is adapted from Luftman's (2000) strategic alignment maturity model (SAMM) to suit the SME context (see Figure 1.1). From Luftman's (2000) six SAMM constructs, three are used. These constructs include communication, metrics and IT business planning. The constructs are discussed in detail in chapter 2. This framework is used in this study because it provides constructs that can measure alignment of IT and business strategies in the context of SMEs. The reason behind the use of the three constructs is provided in chapter 3.



**Figure 1.1: Research Model adapted from Luftman (2000)**

### **1.6. Contribution of the study**

The study contributes to the body of research in alignment of IT and business strategies in developing countries, especially in SMEs where there is little known about the concept (Alyahya & Suhaimi, 2013; Silvius, 2009).

### **1.7. How the literature survey was conducted**

Preliminary research was conducted to determine the topic of the study. The University of KwaZulu-Natal (UKZN) electronic library was used to access various databases from universities around the world. A NEXUS search for current and completed research at South Africa's institutions of higher education was used to ascertain if the topic Alignment of IT and Business strategies is currently being studied, or has been studied in any SA institutions of higher learning. Other academic databases, for example Science Direct, EBSCOhost, were used later when further research was done.

### **1.8. The design and standardisation of the research instrument**

The research instrument (questionnaire) used in this research project was adapted from the instrument developed by Luftman (2000). The instrument was adjusted to suit the South African context and the SMEs. To assess relevance, the instrument was given to a PHD student who is a subject expert for professional opinion. Later the questionnaire was examined by a statistician to confirm alignment between sub-questions and the main questions. This was done to ensure that formulated sub-questions would answer the main questions when scientific methods are applied: Excel and SPSS were used to interpret the data. All suggestions from the subject expert and the statistician were analysed carefully and necessary changes were made until the questionnaire was finalised. To ensure reliability of the results, Cronbach's Alpha coefficient was applied. This is presented in Chapter 4 in detail.

### **1.9. Data collection**

To ensure the collection of valid data, a sampling strategy was selected, and a sample of a carefully determined size was collected. The fieldwork was then conducted. Bryman (2015) defines sample as a part of, but representing, the entire population.

### **1.10. Sample Size**

The sample size symbolises the sum of individuals nominated from the entire population (Newman & Benz, 1998). The term 'population' refers to the universe where the investigator wants to draw an overall conclusion, or the world from which sample features are obtained (Creswell, 2008). For the purpose of this study, the researcher used SMEs in

the Eastern Cape as a population. However, the SMEs used are those registered with the Border-Kei Chamber of Business since they were easily accessible.

The list consisted of company names, contact details, location, number of employees and the company industry. During collection of the list, there were 173 SMEs registered in the database; thus, the population size was 173 SMEs. Based on this number, the sample size was determined using Sekaran and Bougie's (2010) table and was found to be 119 SMEs at 95% confidence interval and a 5% margin of error.

### **1.11. Sampling strategy**

Sampling strategy is a technique used to ensure that a correct sample size is identified from a given population (Bryman, 2015). According to Banister (2011), there are two sampling methods a researcher can chose from. These methods are probability and nonprobability sampling. Probability sampling is a method that represents a case where all members in a population have an equal opportunity of being nominated to take part in the study or sample (Banister, 2011). Techniques for this method are systematic, stratified, random and cluster sampling (Leedy & Ormrod, 2005). Non-probability sampling is a method where the selection of the sample relies on the subjective judgement of the researcher (Banister, 2011). The procedures for this method are incidental sampling, purposive sampling, snowball and quota sampling (Leedy & Ormrod, 2005), and convenience sampling (Dörnyei & Griffee, 2010).

In this research project, convenience sampling was employed. This is a non-probability method in which members of the targeted population are selected if they meet particular practical criteria such as ease of access, willingness to participate, availability at a certain time and geographical proximity etc. (Dörnyei & Griffee, 2010). This method was suitable because SMEs in the Eastern Cape are widely spread across the province. Thus, access to some areas would be highly difficult, especially given the time and financial constraints of the researcher.

### **1.12. Field work**

Two methods were used to collect data. Initially questionnaires were e-mailed to respondents. However, due to low response, the data collection was later self-administered by the researcher. In both cases, respondents were motivated by an explanation of the concept of Alignment of IT and business strategies and its importance. The emphasis that alignment of IT and business has a positive effect on business



performance was made, but the respondents were encouraged to give correct reports on their business by explaining that correct reports contributes heavily to the success of the project (study) and that the results of the study could be used in their respective organisations.

### **1.13. Data Analysis**

The outcomes of the survey were captured into Microsoft Excel by the researcher and then transferred into the “Statistical Package for the Social Sciences” (SPSS). The statistician completed the initial analysis with some interpretation and the researcher conducted further interpretation of the results, linking the analysis of the data to the framework and to the research questions. The interpreted results are presented in tables and graphs in Chapter 4 and the conclusion in Chapter 5.

### **1.14. Ethical consideration**

To satisfy the ethical conditions of the University of KwaZulu-Natal, an application for ethical clearance was made by the researcher before the fieldwork began. The aim of this application was to guarantee that research would be conducted in adherence with the university’s set research policies. During the fieldwork, respondents were aware (in the first page of the questionnaire) that their answers would be reserved anonymously.

### **1.15. Overview of dissertation chapters**

Chapter 1 introduces the reader to the study; explains the problem statement and focuses the problem statement into a research problem; defines the study research problem linking it with the research questions and research objectives. The chapter further outlines the research design employed in this study.

Chapter 2 focuses on the literature survey on the subject under investigation.

Chapter 3 gives a detailed explanation of the research methodology employed in this study.

Chapter 4 presents the analysis of data collected, together with tests performed. Chapter 5 interprets the results in the context of the literature review conducted. It also presents the conclusions, limitations and the recommendation of the study.

### **1.16. Conclusion**

This chapter gives the foundation of the study. The chapter is broken down into two sections. The introduction introduces the study undertaken. The importance and definition of Alignment of IT and business strategies was stated. The section went further

to discuss the lack of research on the concept in South Africa, particularly in SMEs. Based on this, the research problem was stated. The study focuses on SMEs in the Eastern Cape Province and the Border-Kei Chamber of Commerce database was utilised as a reference. The theoretical framework adapted from Strategic Alignment Maturity Model to investigate the problem was summarised. Based on the theoretical framework, four research questions and objectives were developed and aligned with the problem statement. The importance of the study was emphasised. The second section of the chapter discusses tools used to conduct the research. Reasons for the choice of the topic of study were discussed, as well as how the literature review was conducted, and how the instrument was adapted, designed and standardised. Lastly, the chapter presents a sample size of 118 from 173 SMEs, representing the population used. The size was determined using Sekaran & Bougie's (2010) table. Various sample strategies were summarised but convenience sampling was employed in this study. E-mails and self-administration methods for data gathering were utilised, and SPSS was used to analyse the data. Lastly, steps taken to meet the University of KwaZulu-Natal ethical requirements were discussed.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

In Chapter 1, the research problem was stated and deconstructed into research questions and research objectives which were linked to the theoretical framework. The purpose of this chapter is to present the review of the literature in order to understand the problem under investigation. The review of the literature was conducted using theses, articles and textbooks from various university databases, through the UKZN electronic library.

This chapter presents literature reviews on IT-business alignment with specific focus on SMEs. The literature begins with a brief background on the use of information technology (IT) in SMEs. Explaining the use of IT by SMEs, the literature begins by defining the term SMEs, and the importance of, and challenges faced by, SMEs. The literature further emphasises on the importance of IT to SMEs for survival and success; then the importance of IT in general is discussed at length. The adoption and the use of IT by SMEs is also discussed in detail. The failure of IT to produce expected returns especially in SMEs is explored. Having explained poor IT returns, the significance of IT-business alignment for improving IT performance is acknowledged. Lack of knowledge due to the complexity of the concept warrants its definition, which is presented in this chapter. Four types of IT business alignment: alignment of IT and business strategies; operational alignment; cross domain alignment, and structural alignment are briefly discussed.

The concept of IT-Business alignment is narrowed down to the alignment of IT and business strategies, which is the fundamental theme of this study. The chapter further provides an understanding of factors that promote strategic IT-business alignment. Key models (Strategic Grid, Earl's Audit Grid, Nolan's Life Cycle Model, MIT90, SAM, and SAMM) that are used to align IT and business strategies are discussed; since it is best practice (IT Governance-Cobit-ITIL and ISO) that is used to manage strategic IT business alignment.

The dilemma between IT governance and Alignment of IT and business strategies is summarised. Lastly, the chapter highlights lack of research in SMEs which is explained in the context of previous studies and lack of best practises that can be used in SMEs to achieve alignment.

## 2.2 How the review of the literature was conducted

The UKZN electronic library was used to obtain theses, articles, and books which were perused for information. The topic and research questions were used to guide the selection of information. Wikipedia and encyclopaedias were used as a starting point on ideas and idea development. These websites were used because they demonstrate (1) research established on production rather than only critique, (2) textual production based on participation in a discussion rather than isolated thinking, and (3) recursive revision based on idea development (Purdy, 2010). Academic databases, for example **Science Direct**, **EBSCOhost**, were used to review the literature. The academic databases were suitable for their high quality information.

## 2.3 Theoretical background to IT in SMEs

There is no agreement on what constitutes an SME. Definitions differ from country to country depending on the sector in which the organisation operates (Berisha & Shiroka-Pula, 2015). Generally, definitions are based on the organisation's annual income, total assets, and the number of employees (Ghobadian & Regan, 2006).

Definition of SMEs in the UK according to the European classification is presented in Table 2.1.

**Table 2.1: SMEs definition in the UK. Source: Deakins (1999)**

Criteria	Small firm	Medium Firm
Annual turnover	Not more than £2.8 million	Not more than £11.2 million
Balance Sheet	Not more than £1.4 million	Not more than £5.6
Employees	Not more than 50	Not more than 250

According to the Regional Project on Enterprise Development in Ghanaian manufacturing, the definition of SMEs is as presented in table 2.2.

**Table 2.2: SMEs definition in Ghana Source: Teal (2002)**

Criteria	Micro	Small	Medium firm	Large
Employees	Less than 5	5-29	30-99	100 and above

In South Africa, the most commonly used definition is based on the National Small Business Act 102 of 1996 (Abor & Quartey, 2010). This definition is founded on the employees' number, annual turnover and the gross assets. Organisations are classified from micro, very small, and small to medium size enterprises. In South Africa, the term SMMEs is also used (Ndayizigamiye, 2012). The definitions are summarised in table 2.3.

**Table 2.3: Definition of SMEs in South Africa. Source: Falkena, Abedian, Blottnitz, Coovadia, Davel, Madungandaba, Masilela & Rees (2001)**

<b>Enterprise size</b>	<b>Number of employees</b>	<b>Annual turnover (in south Africa ran)</b>	<b>Gross Assets, excluding fixed property</b>
Medium	Fewer than 100 to 200 depending on the industry	Less than R4 million to R 50 million, depending upon industry	Less than R2 million to R18 million, depending on industry
Small	Fewer than 50	Less than R2 million to R25 million, depending on the	Less than R2 million to R4.5 million, depending on industry
Very Small	Fewer than 10 to 20 , depending on industry	Less than R200 000 to R500 000, depending on industry	Less than R150 to R500 000, depending on industry
Micro	Fewer than 5	Less than R150 000	Less than R100 000

Commonly used definitions are centred on the number of employees (Hashim, 2009). Similarly, in this study the definition used is centred on the number of employees. The number of employees was found to be most appropriate, as the data that was easily accessible.

Definitions or categories used in this study are summarised in table 2.4. Micro and very small enterprises are grouped together as very small enterprises.

**Table 2.4: SMEs definition employed in the study**

<b>Enterprises Size</b>		<b>Number of employees</b>
Medium		Above 50 to 200
Small		Above 20 to 50
Very Small fewer than 10 to 20, depending on industry	Very Small	1 to 20
Micro fewer than 4		

The vital role of SMEs in the development of the world economy is well acknowledged (Robu, 2013), in developing and developed countries the case is similar (Alyahya & Suhaimi, 2013). SMEs are the source of entrepreneurial development, skills development,

innovations advancement, employment creation, and economic recovery (Kommission, 2005; Cooperation and Development, 2009). As an example, the 23 million SMEs in 25 European (EU) countries are the source of 75 million jobs and 99% of the total enterprises in the region (Kommission, 2005). Likewise, in developing countries, SMEs play a vital role in reducing poverty through job creation. In Indonesia SMEs accounted for about 97.3% of job creation in 2009 (Saptadi, Sudirman, Samadhi, & Govindaraju, 2012). In Saudi Arabia, SMEs account for 98% of all the enterprises and 63% of the employment (Zawya, 2012); and in South Africa SMEs presently contribute 52 to 57% of the country's GDP and 60 % towards job creation (SARS, 2015).

However, though the role of SMEs is significant in respective national economies, SMEs are still facing challenges such as resource shortages and inadequacies (lack of financial muscle to start and function, skilled labour, human resources and useful marketing tools) (Ghobakhloo, Sabouri, Hong, & Zulkifli, 2011; Levy, Powell, & Yetton, 2011; Saptadi et al., 2012). These challenges limit their ability to survive an ever-growing competition, locally and globally, particularly with big companies (Dawood & Page, 2007; Ghobakhloo, Sabouri, Hong, & Zulkifli, 2011; Levy, Powell, & Yetton, 2011; Saptadi et al., 2012; Agboh, 2015). In line with the competition SMEs are facing, they are therefore forced to seek innovative ways in order to survive pressures posed by big companies (Sharma, 2011; Ramukumba, 2014).

In 1993, Lin, Vassar and Clark stated that SMEs should adopt IT in order to improve their competitiveness (e.g. adopt IT to improve organisation's business processes and flexibility) (Olutoyin & Flowerday, 2016). This statement appears to be valid even today as Robu (2013), Tarutė and Gatautis (2015), state that IT is a fundamental tool an organisation should have in order to survive competition or prosper. This results from the fact that IT is mostly seen as a key tool to advance an organisation's effectiveness (Ciborra, 1997), efficiency (Henderson & Venkatraman, 1993a; Johnson & Lederer, 2010a), competitiveness and innovation (Avison *et al.*, 2004; Kalkan *et al.*, 2011).

IT refers to computer hardware and software that provides backing for the organisation's day-to-day operation, administration and strategies (Thong & Yap, 1995). According to Boar (1997), the concept refers to technologies that are used in the operation: gathering, transporting, retrieving, storing, accessing, and converting information into all required forms. The term has also been defined as the capability provided by applications, computers and networks to transport data, transport information and transport knowledge

to entities and processes (Attaran, 2003); and the creation, installation, and maintenance of technologies (hardware and software) that manage and transfer information electronically (Dictionary.com Unabridged, 2016).

The term is also defined as the technology part of information systems (Hollander, Denna & Cherrington, 1999). In terms of the IT/IS relationship, information technology deals with the technical part of information systems (IS) such as software and hardware; whereas IS explains a combination of people, technology, and processes (Peppard & Ward, 2004). In business relationships, definitions have been identified. Carr and Smeltzer (2002) defined the term as the use of computerized buying systems connected to suppliers with data communication technologies (ICT): computer-to-computer connections with suppliers. These various definitions indicate that there is no one commonly used definition for IT (Ghobakhloo *et al.*, 2011b).

Despite numerous definitions that are used to refer to IT, the use of IT is noticeable everywhere (Dutta & Bilbao-Osorio, 2012). Today it is a keystone in business (Ward & Peppard, 2016). However, the use and importance of IT in business has been changing over the year. In the 1980s, some organisations were using computers to improve their organisational effectiveness and efficiency by computerising routine and clerical tasks. However, by the late 1980s, some organisations began using IT to leverage business value (Somogyi & Galliers 1987) For example, IT (internet) has been used in shaping and introducing new ways to deliver products and services (Albayrak & Gadatsch, 2012). A similar argument was presented by Ward & Peppard (2016). However, they argued that the use of IT changes the way enterprises carry out their business: changing the balance of power with respect to their customers, suppliers and competitors, started in late 1970's; while in the mid-80s the use of IT began to gain a competitive edge.

Today technologies such as cloud computing, social media, mobile and big data are transforming the IT industry and the way businesses operate across all markets (IDC, 2013). Cloud computing can be defined as a model where computing services are delivered over the Internet (Malviyal & Chakraborty, 2013); computer services (storage, security, etc.) that can be accessed anywhere and anytime as long as one is connected. Social media such as Facebook, twitter, YouTube and Whatsapp (Choudhury, Gamon, Counts & Horvitz, 2013) has changed how the business environment operates. Businesses today are able to gain access to markets, which are very hard to reach with traditional marketing systems (Berthon, Plangger & Shapiro, 2012; Jagongo & Kinyua, 2013).

Mobile technologies have changed how organisations operate. Technologies like smart phones, tablets and other mobile devices have enabled employees to work all over the world when connected to the internet, anywhere and anytime. Unlike, traditional models whereby an employee in a company works eight to nine hours in a shift (Jennifer, Kelley, & Hatch, 2016). In addition, big data and its analysis are at the heart of modern science and business (Sagiroglu & Sinanc, 2013). These data are generated from various technologies such as online transactions, emails, videos, audios, images, click streams, logs, posts, search queries, health records, social networking interactions, science data, sensors, mobile phones and their applications (Eaton, Deroos, Deutsch, Lapis & Zikopoulos, 2012). This technology has transformed data analysis for decision making out of IT backrooms, and expanded the potential of using data-driven decisions in any part of the organisation (EY Report 2014).

Although the use and importance of IT in business has been changing, it is important to note that the use of IT by large organisations and SMEs has also been changing. Studies reveal that large organisations have previously been more intensive in the use of IT; this is generally attributed to the fact that large organisations had the required resources to adopt IT, unlike SMEs whose IT adoption is frustrated by the lack of financial and human resources (Agboh, 2015). Many SMEs suffer in this area and in most cases, owners are forced to make personal cash injections (Fuller Love, 2006). Lack of financial means forces

SMEs to be vigilant about their capital spending and investments (Ghobakhloo, AriasAranda, & Benitez-Amado, 2011).

Nevertheless, later research has indicated that costs of IT have dropped significantly (Wu, Yeniyurt, Kim, & Cavusgil, 2006; Dibrell, Davis, & Craig, 2008) thus making it possible to have access to IT. This ranges from the cost of buying, installing and managing. For example, the use of cloud technology, mobile technologies, social media etc. have made it possible for SMEs to gain access to necessary technologies to compete. In broader sense, through the development of cloud computing, most technological issues and challenges such as cost of owning big infrastructure, skilled IT labour etc. have been mitigated largely. Today we see technology provided as a service to organizations (Malviya1 & Chakraborty, 2013). In SMEs, it is reported that this technology offers significant benefits, e.g. by enabling a reduction in the financial challenges related to new technology adoption (Carcary, Doherty & Conway, 2014). Similarly, previously the cost



of buying computers were too high (e.g. mainframes were extensively high in cost); however, technology innovations which led to the development of smaller and cheaper ways of computing (e.g. desktop computers, laptops, tables and smart phones) have made it possible for SMEs to own computers. Likewise, social media such as Facebook, twitter, YouTube and Whatsapp (Choudhury et al., 2013) have introduced cheaper ways to market products (Berthon et al., 2012). This explains why the use of IT by large and SMEs is narrowing (OECD, 2006) and why the adoption rate of IT by SMEs in both developing and developed countries is growing (Agboh, 2015).

Despite positive impact caused by reduced IT costs, the failure of IT to produce the required results has been noted. Coviello and Di Trapani (2013). Indicate that more than 75% of IT projects fail to deliver the desired tangible results. This case was found to be intense in SMEs (Nguyen, 2009). In fact, there is more IT implementation failure in SMEs compared to large organisations (Bruque & Moyano, 2007, Zach & Erik Munkvold, 2012).

Over the years, various reasons for the failure of IT to deliver the required returns have been documented. Some of these failures are attributed to challenges such as those explained by (Levy *et al.*, 2011, Saptadi *et al.*, 2012, Ghobakhloo *et al.*, 2011b). On the other hand, IT failures are attributed to fragmented and unplanned IT use (Levy *et al.*, 2003); lack of clarity as to why and how IT should be implemented; misunderstanding of IT adoption processes and limited resources to grow IT resources (Nguyen, 2009). This supports Carr's (2003) argument that value delivery depends on how IT is managed. Therefore, the key issue is to know under which conditions organisations are able to derive value from their IT investments. Furthermore, Carr (2003b), Kohli and Grover (2008), Hussin and Suhaimi (2011) agree that value is not derived simply from IT investments. All these arguments are in line with Gattiker and Goodhue (2004) who stated that not all organisations that have made investments achieve higher performance. While some organisations achieve higher performance with their IT investments, others do not. However, much research has highlighted the perspective of alignment between Information technology and business, meaning merely investing in modern IT cannot confirm the realisation of these benefits to an organisation. Instead, anticipated IT benefits can be achieved if there is alignment between IT and business in an organisation (Coviello & Di Trapani, 2013; Kohli & Grover, 2008; Hussin & Suhaimi, 2011; Alyahya & Suhaimi, 2013; Coviello & Di Trapani, 2013; Kohlborn, Poeppelbuss, Roeglinger, Brocke, Schmiedel, Recker, Trkman, Mertens & Viaene, 2014; Tarhini, Ammar, Tarhini

& Masa'deh, 2015; Abbasi, Tarhini, Hassouna, & Shah, 2015). Nevertheless, it is not clear what exactly IT-business alignment really means. Different researchers and practitioners (Ofe, 2013; Kekwaletswe & Mathebula, 2014) use many definitions and terms.

## **2.4 IT and business alignment theory**

One of the key issues in the area of IT and business alignment is to plainly describe the meaning of the concept (Cataldo & McQueen, 2014). IT and business alignment is a wide field of study with overlapping definitions (Ofe, 2013), making it hard to reach a common understanding among researchers (Kekwaletswe & Mathebula, 2014). For example, Baets (1996) defines alignment as the collaboration process among the organisation's business, business strategy, as well as IT and IT strategy. It is the degree to which IT and business strategies support each other (Luftman, 2000a); the degree of support that IT goals and objectives provide to business goals and objectives vice versa (Reich & Benbasat, 2000a); and the degree to which business plans, mission and goals support and are supported by their IT complements (Walter *et al.*, 2013).

Various definitions of IT-business alignment have also led to various terms being used to refer to alignment: connection (Reich, 1993); harmony (Luftman, Lewis & Oldach, 1993); fit (Porter, 1996); bridge (Ciborra, 1997); integration (Broadbent, 1998); linkage (Henderson & Venkatraman, 1999) and fusion (Aversano, Grasso & Tortorella, 2013). However, currently the dominant term is alignment (Chan & Reich, 2007b).

The diversity of IT-business alignment definitions are subject to the diversity of business contexts and the types of alignment (Baker & Jones, 2008). This supports Regev and Wegmann (2004) who posit that alignment can be seen from different dimensions. Below several types of IT-business alignment are discussed.

Alignment of IT and business strategies is a type of alignment that helps organisations to achieve and maintain a leadership position in a business environment where it is hard for organisations to distinguish themselves, as the power of imitation is high in the field. Alignment ensures that organisations are becoming business driven and information centric (Zapata, 2016); which helps the organisation meet its future IT needs (Alyahya & Suhaimi, 2009).

Operational alignment guarantees efficiency and effectiveness of IT in supporting the organisation's operations on a daily basis (Alyahya & Suhaimi, 2009). Henderson and Venkatraman (1999) mentioned three elements which are administrative architectures/

infrastructure, processes, and skills. This type of alignment depends on the ability of the management to integrate the organisation's processes and infrastructure of business and IT.

While Alignment of IT and business strategies and operational alignment scrutinises alignment at the same opposite level of IT and business domains (strategy – strategy, infrastructure- infrastructure), Henderson and Venkatraman (1993) expanded to four distinct cross-domain groupings of infrastructure and strategy: technology transformation, strategy execution, competitive potential, and service level. Technology transformation represents an area where IT infrastructure is influenced by the business strategy (alignment is termed business strategy-to-IT infrastructure cross-domain alignment) but this is limited by IT strategy (IT alignment). The strategy execution represents an area where business strategy influences the IT infrastructure (alignment is termed business strategy-to-IT infrastructure). However, this is limited by business infrastructure (business alignment). Competitive potential represents an area where IT strategy influences the business infrastructure (termed IT strategy-to-business infrastructure) but limited by business strategy (business alignment). Service level represents an area the IT strategy influences the business infrastructure (termed IT strategy-to-business infrastructure) but limited by IT infrastructure (IT alignment).

Lastly, Sabherwal *et al.* (2001) presented another form of alignment called structural IS/IT alignment. This form explains the alignment that exists between business structures and IT structure. Structural IS/IT alignment looks at decision-making rights, how reporting is done, provision of IT services, IT assets, and positioning of IT employees (Peppard & Breu, 2003). According to Bergeron, Raymond and Rivard (2004), there are three dimensions of IS/IT structure: IT organisational structure, technological architecture and skills dimension. The IT structure dimension consists of duties of the IT department and the level of decentralisation of the IT organisational structure (Bergeron *et al.*, 2004); while the technology part consists of the positioning of hardware, technology standardisation and the incorporation of IT infrastructure and applications (Bergeron, 2002). The technological architecture can be viewed in two perspectives: first the infrastructure level and then the application level (Van Eck *et al.*, 2004). The two perspectives must be planned and managed differently. The IT infrastructure is based on the IT strategy developed, while the software/ applications are based on the requirements of the user and IT infrastructure already in place (Van Eck *et al.*, 2004). The skills

dimension looks at the skills needed for planning, implementation and standardising practices of software development (Bergeron, 2002).

Despite the evidence that IT-business alignment can be defined from the different perspectives (Coertze & Von Solms, 2014), many studies argue that, if organisations seek to maximise IT benefits, they should focus on achieving alignment between IT and business strategies (Banker, Hu & Pavlou, 2011). This type of alignment creates complete harmony among all four domains of the organisations: Business strategy, IT strategy, Business infrastructure and IT infrastructure (Henderson & Venkatraman, 1999). Therefore, it ensures that organisations obtain the maximum benefits from their IT (Levy, 2000; Luftman, 2007; Luftman, Banker, Hu & Pavlou, 2011).

## **2.5 Alignment of IT and business strategies.**

The fundamental goal for aligning IT and business strategies is to help organisations leverage digital platforms in order to facilitate or drive competitive advantage. The concept is primarily derived from a relationship where the business and IT departments acclimate their strategies at the same time (Luftman, 2004).

Since the concept is centred on the term strategy, IT strategy, Business strategy and alignment, this section will therefore provide a short explanation on each term. A detailed definition is not necessary as these terms can take many forms. However, it is important to get the principal meaning of the concept in order to understand how the relationship between IT and business strategies emerges.

### **2.5.1 Strategy**

In military writing, Clausewitz (1999) defines strategy as how to use individuals in a war. In that, it requires human action to achieve the required outcomes with the available limited resources (McKeown, 2011). In business, Chandler (1969) presented a definition of strategy where the concept refers to the formulation of the fundamental long-term objectives of the business/ organisation, and the approval of plans of action and the distribution of resources required to deliver these goals. According to Porter (1996) strategy is about being different. In other words, the term strategy implies consciously making various decisions to deliver a unique value mix to customers. More recently, Johnson *et al.* (2015) presented a definition where strategy is described as “the scope and direction of the organisation over the long term that will give the organisation an advantage in an ever-changing business environment, by managing the organisation’s

resources with the goal of delivering as per the stakeholder's expectations'. Peña and Ricart (2015) defined strategy as a choice a company makes about the future it desires and the manner in which the future will be achieved.

### **2.5.2 Business strategy**

The term business strategy refers to the guide that helps the organisation to understand what is going on within and beyond its competitive environment (Kourdi, 2015). The formation of long-term business goals and objectives and the adoption of actions by the organisation include the distribution of resources essential for carrying out those goals and objectives in order to prosper against competition (Silvius, 2007). Activities in the market that business leaders undertake to increase the organisation's financial performance reinforce the organisation's long-term competitive position and allow it to gain competitive advantage over competitors (Welch *et al.*, 2008). The concept therefore explains the skills necessary for the organisation to master in order to be able to deliver products and services to its markets (Makhathini, 2014); and explains the organisation's plans to produce monetary profits either by lowering costs, or providing high quality, or introducing new products (Yang *et al.*, 2015). However, despite the clear importance of business strategy, some researchers argue beyond business strategy. These researchers argue that the organisation's business strategy alone cannot help the organisation to attain a great performance and competitive advantage and therefore suggest that business strategy should be supported by good compensation systems (Chen & Jermias, 2014). This argument is supported by Dubey (2016), stating that it is the responsibility of IT to support, boost and expand organisations' business strategies.

### **2.5.3 IT strategy**

"IT strategy is simply business strategy with an information hat on." (Goldsmith, 1991, p. 1)

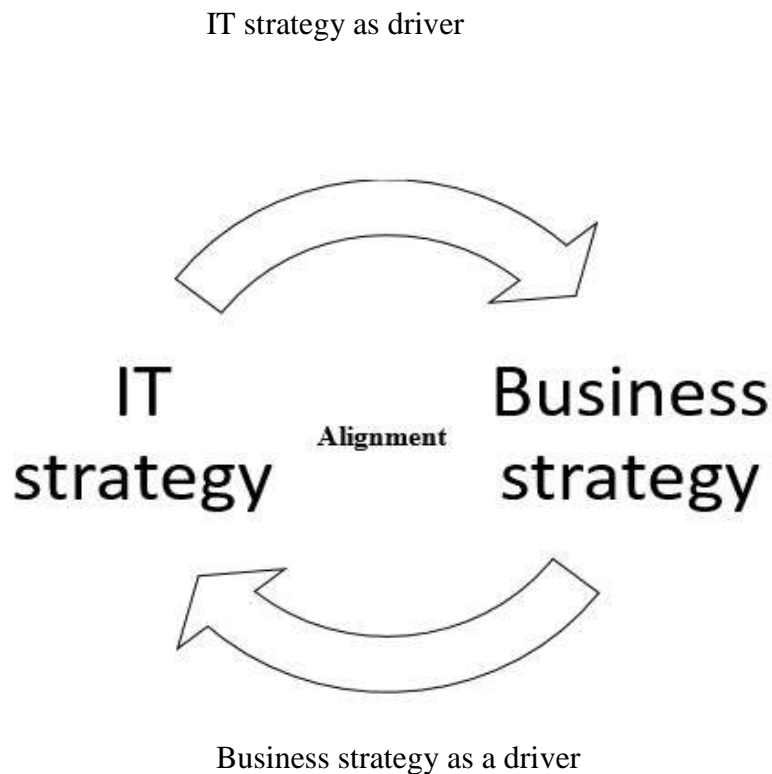
IT strategy is necessary for organisations since it provides a long-term view of IT (Dubey, 2016). Technically, the concept refers to the maximum distribution of technology resources to provide support for the organisation's needs (Gadiesh & Gilbert, 2001). In this, IT provides efficiency and effectiveness, and responsive and flexible systems that will help the organisation to meet its current and future business needs (Dubey, 2010). These technologies consist of software/applications, technology infrastructure, operating systems and staffing infrastructure (Gadiesh & Gilbert, 2001).

#### 2.5.4 Alignment

The alignment between the IT strategy and business strategy exists when the IT and business department work in partnership to develop and adapt their strategies together and strive to accomplish the same goal (Alaceva & Rusu, 2015). In detail, the concept explains the unification of IT strategy and business strategy with the purpose of attaining competitive advantage. This goal is delivered by providing IT plans, goals, mission, and funding that are linked to achieving business goals (Walter *et al.*, 2013; Reich & Benbasat, 1996a). Therefore, it is the management's responsibility to ensure that they are constantly mindful about components of IT strategy and business strategy that should be connected to realise IT benefits (Maes, Rijsenbrij, Truijens, & Goedvolk, 2000). IT capability always acts in concert with needs of the business by providing efficiency and effectiveness (Ciborra, 1997; Dubey, 2016), and responsive and flexible systems that will help the organisation to meet its current and future business needs (Avison *et al.*, 2004; Dubey, 2016). IT improves innovation (Avison *et al.*, 2004; Kalkan *et al.*, 2011); low cost (Henderson & Venkatraman, 1993a; Johnson & Lederer, 2010a), enhancement of customer values (Celuch *et al.*, 2007) and reorganises the firm's complex business processes and business strategic activities (Luftman *et al.*, 1993). Based on this, we can conclude that alignment ensures that organisations avoid unnecessary projects and wasteful spending but maintain strategic focus on the role of IT within the organisations.

However, achieving alignment of IT and business strategies is a difficult task (Jahnke, 2004; Oracle, 2013; Ullah & Lai, 2013). Perhaps because it is a persistent/pervasive challenge that requires an on-going process to ensure that IT and business strategies adapt effectively and efficiently together (Brocke & Rosemann, 2014). Luftman, Wander, Nathan and Sutaria (2013) drew a picture of the challenge in which they compared with drawing a line in the sand. This resulted from ceaseless changes in business strategies in response to today's highly competitive business environment (DeFusco, McLeavey, Pinto, Runkle & Anson, 2015). The environment forces organisations to revise their business strategies constantly in order to stay competitive in the market, or risk their competitiveness because their strategies do not align with characteristics of the market they operate in (Svensson, 2015). Likewise, constantly evolving technology (Durney & Donnelly, 2015), forces organisations to revise their IT strategies as organisations seek to capture new capabilities or opportunities presented by IT (i.e. new technology that can lead to a new business model, new ways of delivering products or services which will influence the organisations business strategy). In light of these changes, it is important to

ensure that the two are in harmony because it is only then that organisations will be able to realise maximum returns from their IT. Hence, organisations will be able to leverage IT capability while avoiding unnecessary IT investments. Since business strategy is illustrated as a driver, the changes initiated will inform changes in the counter partner and vice versa (Henderson & Venkatraman, 1993) (See figure 2.1).



**Figure 2.1: alignment process**

Based on the illustration, it is clear that alignment should be seen as an on-going process to ensure that IT and business strategies adapt effectively and efficiently together (Brocke & Rosemann, 2014).

Nonetheless, in an attempt to understand IT and business strategies, researchers, academics and practitioners have spent decades studying the subject (Coertze & Von Solms, 2014; Lee, 2011; Alyahya & Suhaimi, 2013; Luftman & Ben-Zvi, 2011; Silvius, 2014; Gerow *et al.*, 2015) and various approaches were developed (Alyahya & Suhaimi, 2013). Luftman *et al.* (1999) documented research on what organisations can do in order to attain alignment. The research was translated to enablers and inhibitors of IT-business alignment. The work was conducted over a period of 5 years (1992 to 1997) by interviewing executives in both business and IT. This is summarised in Table 2.5.

**Table 2.5: Six key factors that promote IT-business alignment. Source: Luftman, Papp, & Brier (1999 p.4)**

Enablers	Inhibitors
Senior executive support for IT	IT/business lack close relationship
IT involvement in strategy development	IT does not priorities well
IT understand the business	IT fails to meet commitments
Business-IT partnership	IT does not understand business
Well-prioritised IT projects	Senior executive do not support IT
IT demonstrates leadership	IT management lacks leadership

Regarding factors that promote alignment, the study first highlighted the importance of support for IT by senior business executives as the most important enabler of alignment. The importance of having business executives who are aware of IT activities and support IT innovations is key. The support should recognise the value of IT in the organisation, define the role of IT in the organisation's vision and strategies clearly, and fund IT projects (e.g. providing leadership and funding). The lack of business executive assistance may lead to a lack of financial assistance or backup and wasted opportunities (Luftman *et al.*, 1999).

The second, important enabler is IT involvement in business strategy development. Senior IT and business managers should recognise the need to have a mutual understanding and a strong working relationship in the formulation of the business strategy. The findings of the study noted that alignment is easily achieved when all departments, including IT, are involved in the development of the organisation's strategies (Luftman *et al.*, 1999).

The need for IT to understand the business environment was noted as the third enabler. IT should understand the organisation's competitors, suppliers and customers or clients. The fourth factor emphasises the need for IT and business to have a partnership. This emphasises the need for both parties to understand each other; IT must use a language that is clear for business personnel. ITs should focus on using their IT knowledge and skills in identifying business opportunities (Luftman *et al.*, 1999).

Luftman *et al.* (1999) recognised the importance of prioritising IT projects as the fifth important factor: the ability of an organisation to employ IT in the organisation's business strategy in a timely manner in order to ensure that the organisation does not fall behind its competitors. Lastly, the ability of IT to demonstrate leadership was recorded as an



important sixth factor. This speaks to the organisation's IT being able to lead competitors in IT innovations.

The five enablers are key areas which an organisations' executives should maximise in order to achieve alignment; similarly, organisations need to minimise inhibitors (e.g. When IT and business does not have a close connection, IT does not prioritise well and fails to meet its obligations and senior executives fail to support IT and IT management) (Luftman *et al.*, 1999).

Other authors discuss different approaches in organisations in order to advance Alignment of IT and business strategies. Some researchers' emphasise on planning. Planning is important as different environments produce different threats and opportunities for different companies (Ghorbani & Shakeri, 2010). To achieve this various planning models have been proposed by different authors. These models are great tools that can be used to trace the use of IT by the organisation and how IT can be positioned so that it supports the organisation's business strategy. Among many models Nolan's Life Cycle Model, McFarlan and McKinney's Strategic Grid and Earl's Audit Grid will be explored. These are popular models in planning for IT. These models are used to assess how a company is currently using IT and explains how changes in IT strategy can help support the organisation's overall Business strategy (Corboy, 2007a). In addition, SAMM will be discussed as a suitable tool to assess alignment in today's constantly changing environment, and why IT Governance as a practise is suitable to manage and Govern alignment today.

#### **2.5.4.1. Nolan's Life Cycle Model (Nolan, 1979)**

This model was developed by Nolan (1979). While the model is old, it is still in use even today (Anderson, 2014). The model views the introduction of IT and application as a series of stages. This model presents six stages of growth, which include, "initiation stage, contagion stage, control, integration stage, data administration stage, maturity stage" (Nolan, 1979: 117). These stages explain how the use of IT within the organisation, could be traced and improved by managers up to the level where IT works fully, hand in hand with the organisation's business strategies.

##### **o Initiation stage**

This stage explains the introduction of technology to the organisation. In the initiation stage the organisation has no technology at all; realising the benefits associated with IT

(systems and application) the organisation is persuaded to buy IT systems and applications. At this stage, the main reasons for introducing IT is to reduce ever-increasing administration costs and to facilitate computation requirements, thereby accessing the benefits of speed, volume of processing, and accuracy.

At this stage, the organisation's personnel skills are applied in an analytical environment, using information obtained from the systems to make decisions. The main concern of managers is to save money through use of IT.

#### o **Contagion stage**

A key emphasis in this stage is change management. At the contagion stage, employees are made redundant by the new technology. Management outlines the benefits of IT and this leads to the adoption of information technology in other functional areas. However, as the use of information technology increases, costs begin to spiral out of control, and hardware and software increase in complexity. Management struggles to build specialised roles to contain and manage the implementation of information technology.

An organisation identified at this stage requires managers to start planning for their IT as its standardisation becomes paramount.

#### o **Control**

In this stage, the organisation focuses more on controlling costs and complexities recognised at the contagion stage. These problems concern users in the organisation. The IT manager/ Technician plays a big role in the organisation as many applications are of no value, and/or are incompatible.

In the control stage, standards and rules are developed to manage complexities recognised.

#### o **Integration stage**

As various sections of the organisation are using dissimilar applications, systems cannot talk to each other; data is duplicated which causes errors and unnecessary waste of time. The organisation focuses on connecting hardware and software to make sure that all systems and software/ applications can talk to each other. This focuses on linking computerisation established in the contagion stage. An organisation identified at this stage requires management teams such as IT and a steering committee to bring harmony into the organisation.

#### o **Data administration stage**

Information needs to be available to all individuals at all levels and should be the same and clear to everyone. Therefore, the organisation realises the importance of managing

its data, as opposed to just using information technology. At this stage, a database normalisation is performed and an application portfolio is implemented.

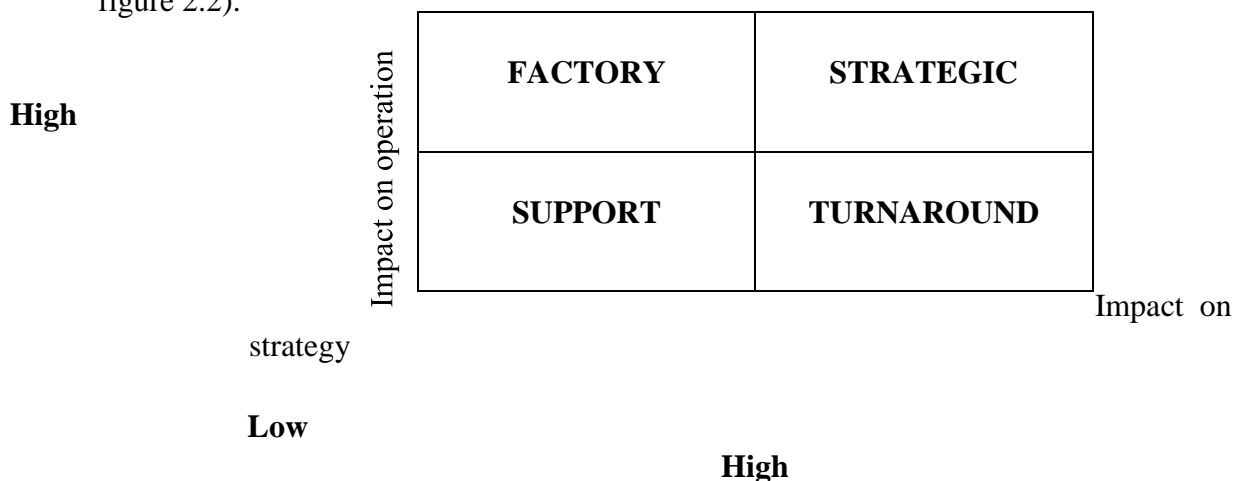
#### o **Maturity stage**

At this stage, the information technology implementation recognises the organisation and its needs. Information is used as a tool to gain a competitive edge and information management is seen as an important strategic matter. The information movements in the organisation reflect the real world requirements of the organisation.

At the maturity stage, IT is fully integrated and IT managed like any other asset of the organisation. This is the stage where IT and Business are in harmony.

#### **2.5.4.2. The Strategic Grid Source (McFarlan & McKenney, 1983)**

McFarlan and McKenney developed this model in 1983. The model allows visualisation of the relationship between business strategy, and IT strategy and operations. The model assesses the impacts of IT existent applications (present) and of applications portfolio (future), defining four boxes, with each representing one possible role for IT in the enterprise: The model is in the form of a grid (support, factory, turnaround, strategic) (See figure 2.2).



**Figure 2.2: The Strategic Grid. Source: McFarlan & McKenney (1983)**

The grid has four quadrants founded around two important questions:

- 1) How does the organisation management value the contribution of IT to the organisation?
- 2) How does the organisation perceive future improvements in the IT environment and how is IT for the organisation? i.e. the influence of IT in the organisation's business model

Depending on the answer to the above questions, the organisation's IT can be placed in one of the four quadrants:

- 1) Low operation and low on strategy (**support**): IT has little relevance and is used to support existing processes. Management prevails over IT.
- 2) Low operation and high on strategy (**turnaround**): IT will be used more by the organisation in the future. The organisation is convinced IT will have a big impact on the organisation's business model, therefore, IT is in the turnaround role. IT will play a key role in the organisation's future strategic planning. At this stage, the organisation is classified as moving into a new environment. Prediction and innovation seeking through creative IT management are necessary.
- 3) High on operation and low on strategy (**factory**): IT is in the factory quadrant. IT is important to ensure that the organisation's day-to-day processes are achieved, but there is no indication that IT can have any major impact on how business is done (impact on the business model). The organisation is in a state of equilibrium, and keeping things unchanged is seen as a better option, so no new application is required. Stable IT management is common in such organisations.
- 4) High on operation and high on strategy (**strategic**): In this quadrant IT plays a critical role in its present role and in terms of how future IT advancement are viewed as part of the organisation. The organisation constantly needs to watch and think about the future. At this stage, an IT culture of management innovation and creativity is very important. Organisations should focus on this quadrant. The management should find innovative and creative ways to drive their IT forward if they seek to achieve alignment of IT and business strategies.

#### 2.5.4.3. Earl's Audit Grid (Earl, 1989)

This model was developed by Earl (1989) as a tool it measures the quality of a company's IT. Refer to Figure 2.3:

<b>Low</b>		<b>High</b>	
		Technical quality	
<b>Low</b>	Business value	DIVEST	REVIEW
		RENEW	MAINTAIN & ENHANCE
<b>High</b>		Impact on strategy	

**Figure 2.3: The Earl's Audit Grid. Source: Earl (1989)**

The model has two domains: the business value and technical quality domains. The business value domain indicates how the company assesses the value of IT in terms of ease of use and how regularly the system is used. Users are used to making this assessment. The technical quality domain looks at the cost of the IT, its reliability and the need to maintain the system. IT experts are used to making this assessment.

The model consists of four quadrants. The first quadrant indicates low business value and low technical quality. If the organisation's assessment of its systems is in this quadrant, the organisation should find out why it has that system. Investment may be the best approach. The second quadrant indicates high business and low technical value. The users of the systems see IT adding value to their work. However, they are frustrated by the poor technical quality. The organisation should renew IT systems if it wants to make its employees happy. The third quadrant indicates low business and high technical value. The system is overstated, and adds little business value to the organisation. The organisation needs to find out why the organisation invested in that IT. Answers will be technical if suggested by IT and business-driven (IT strategy) if suggested by the end users. The last quadrant indicates both high business and high technical value. The key here is to maintain and improve the system because end users see value in the system. This is the quadrant where managers should strike to position their IT.

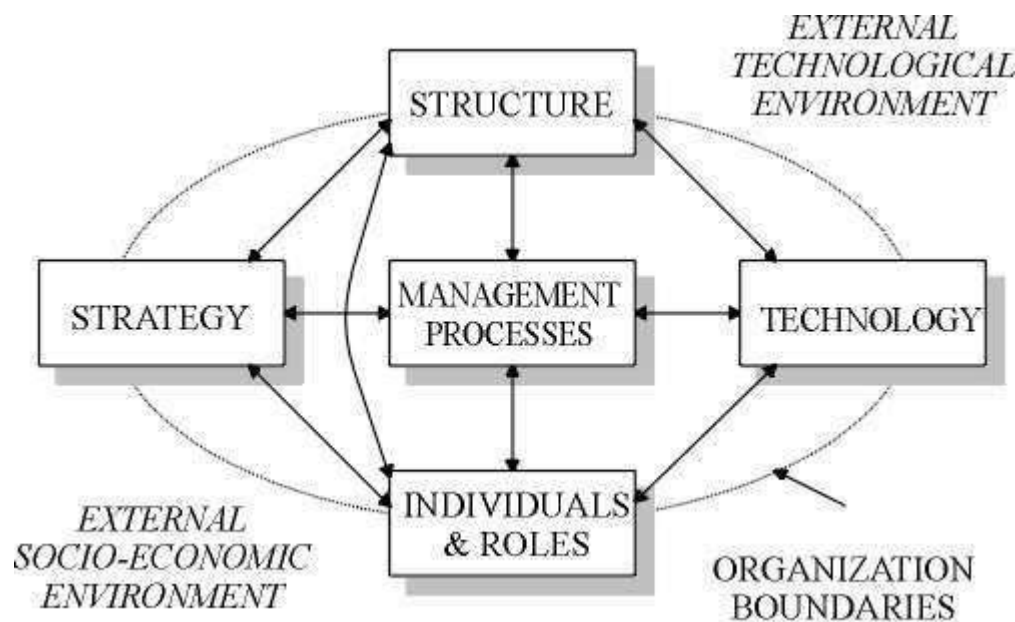
However, among many models, Brocke & Rosemann (2014) argue that to date, Luftman (2000) Strategic alignment maturity model (SAMM) still proves to be a useful model in aligning IT and business strategies. Firstly, it can be argued that it is because the model was developed mindful of the shortcomings of previous models: MIT 90 and SAM in line with Papp & Brier (1999) enablers of IT and business alignment. However, it is also important to note that the model draws its strength by focusing on the social dimension of strategic alignment (Luftman, 2000). Instead of dealing with the science (mechanical view of IT and business) of aligning IT and business, the model focuses on social dimension (communication, value measurements, IT governance, partnership, scope, architecture and Skills) that improves relationships and cognitive linkages between IT and business (Schlosser, Wagner & Coltman, 2012). Instead, the model focuses on how to improve the social dimension of the company, which explains the degree of collaboration between IT and business.

### 2.5.5. Achieving Alignment of IT and business strategies with SAMM

This section discusses the strategic alignment maturity model (SAMM) in detail. Several studies, which have used the model, are highlighted. The section begins by discussing various approaches to which this model is grounded. The following sections will also show shortfalls of previous models and how these models are built in to SAMM.

#### 2.5.5.1. Background to strategic alignment maturity model

SAMM is a model purely grounded in the Strategic alignment model (SAM), and in concert with the earlier enablers/inhibitors of Luftman, Papp, and Brier's (1999) research. Henderson and Venkatraman (1991) developed SAM. The model is seen as the general model for achieving alignment of IT and business strategies (Henderson & Venkatraman, 1991) and perhaps the most cited model of all (Cataldo & McQueen, 2014). SAM was influenced by the MIT90. A model developed at the Massachusetts Institute of Technology (MIT) by a team led by Michael S. Scott Morton. The original conceptual model was developed by Rockart and Morton (1984), and consisted of five sets of forces: strategy, technology, structure, individuals and roles, and management processes (See figure 2.4).



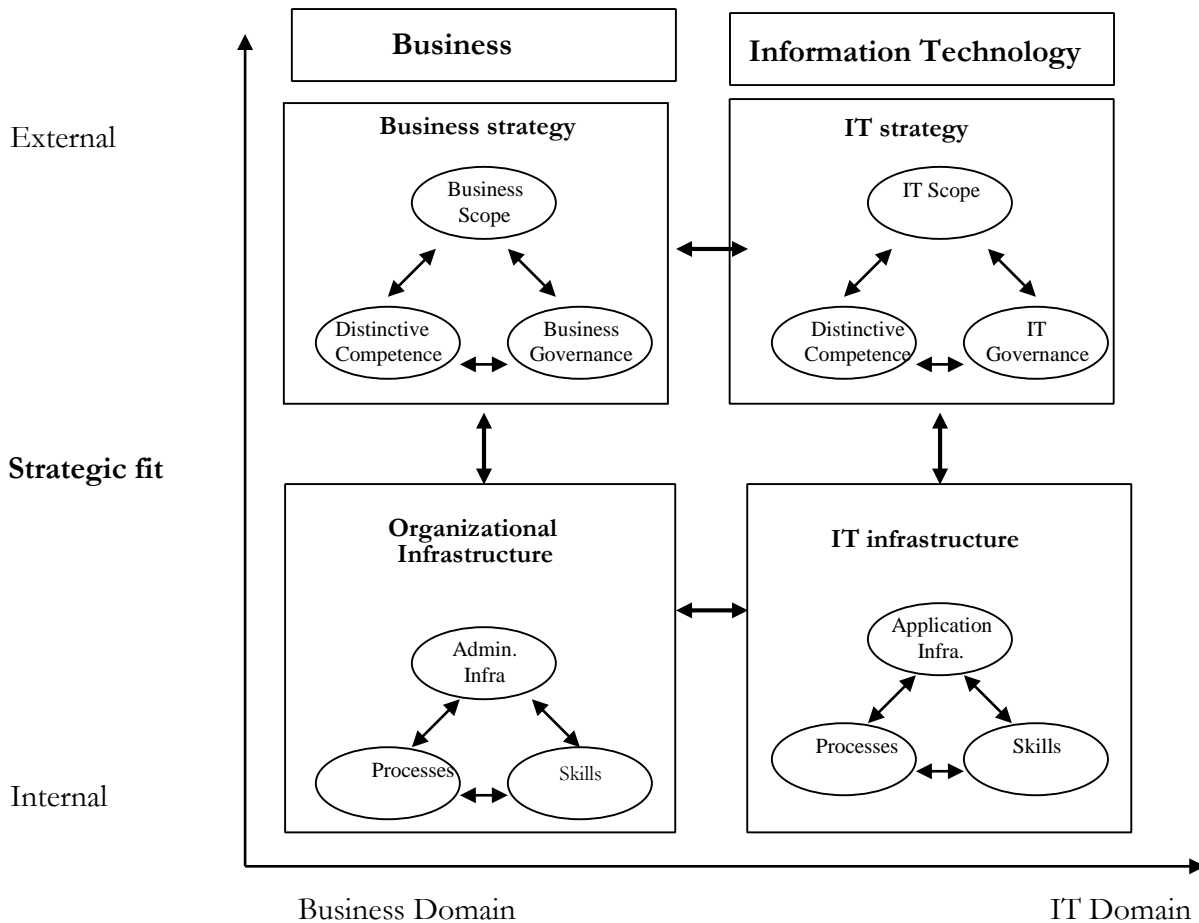
**Figure 2.4: The MIT90. Source: Rockart & Morton (1984)**

IT is identified as the main enabler of strategic directions. The model suggests that the main problem is finding the connection between the strategic ideas and the application of IT. This model explains how IT impacts the organisation and how the five forces contribute to alignment. Moreover, the model argues that maximum performance can be attained if the organisation's management succeeds in creating the strategic alignment

between the organisation's positions in the competitive marketplace and by designing a suitable management structure to support its execution (Morton, 1991).

The MIT90 argues that the success of the organisation rests on the capability to create alignment among five forces of both the external and internal business environments (MacDonald, 1991). However, as set out by Morton (1991), the model was found to be static as the model studies concept of Alignment of IT and business strategies from only one perspective (Hsiao & Ormerod, 1998; Yetton, Johnston, & Craig, 1994).

Based on MIT90, Henderson and Venkatraman (1991) developed SAM. The model explains complex relationships that need to be understood in order to align the business and the IT strategies. The model comprises of two major domains: Business domain and the IT domain. Within these domains, there are external and internal domains. The external Business domain is concerned with business strategy, and is comprised of business scope, distinctive competencies, and business governance. The external IT domain is concerned with IT strategy, and is comprised of technology scope, systemic competencies, and IT governance. The internal Business domain is concerned with organisational infrastructure and processes, and comprises of administrative structure, processes, and skills. The internal IT domain is concerned with IT infrastructure and processes, and comprises of IT architecture, IT organisational processes, and IT skills (See figure 2.5).



#### Functional Integration

**Figure 2.5: SAM. Source: Henderson & Venkatraman (1991)**

However, according to Luftman *et al.* (1999) the SAM has some shortcomings, particularly that Henderson and Venkatraman (1991) did not provide clear explanations about the twelve components of the SAM. The model received a lot of criticism because it relies on the mechanistic view of the company (Smaczny, 2001b); thus the model is not responsive and not flexible to accommodate the ever-changing business world.

In 1996, luftman conducted an extended research that began when he redefined the SAM model. However, because of deeper research using his model, in year 1999, Luftman, Papp and Brier, (1999) published six enablers and six inhibitors of alignment of IT and business strategies.

Luftman *et al.*, (1999) explains that when senior business executives understand and support the role of IT as an important element in the organisation's strategy, alignment of IT and business strategies are enabled. A lack of such support inhibits alignment of IT and business strategies. If the IT managers demonstrate a strong understanding of the business, alignment of IT and business strategies will be enabled. However, a lack of understanding of the business by IT management inhibits the alignment of IT and



business strategies. If the relationship between IT and the business is one of a partnership, then alignment of IT and business strategies are enabled. If a close working relationship between IT and the business does not exist, then alignment of IT and business strategies are inhibited. If managers are able to prioritise IT project, alignment of IT and business strategies are enabled. If IT projects are not prioritised well then alignment of IT and business strategies will be inhibited. Lastly, if there is good IT leadership in the organisation, then alignment of IT and business strategies are enabled. If not, alignment of IT and business strategies will be inhibited. Luftman *et al.*, (1999) argues that the key issue is to try to maximise enablers and minimise inhibitors to achieve alignment between IT and business strategies.

In the year 2000, Luftman provided a new model. The model is strategic alignment maturity model used to assess maturity level of alignment. This model is developed in line with his earlier research. Building from that background, luftman (2000), concluded that alignment between all (12) components of SAM are strongly influenced by six factors: communication, measurements, governance, partnership, scope and architecture, skills. Luftman (2000) defined attributes that determine the level of maturity in each factor. See summary in Table 2.6.

**Table 2.6: Luftman’s six alignment constructs. Source: Luftman (2000)**

<b>Communication maturity</b>	<b>Value measurements maturity</b>	<b>IT Governance maturity</b>
1. Understanding of business by IT 2. Understanding of IT by business 3. Inter/ intra organisational learning 4. Protocol rigidity 5. Knowledge sharing 6. Liaisons (s) effectiveness	1. IT matric 2. Business Metrics 3. Service level agreement 4. Benchmarking 5. Formal assessment review 6. Continuous improvement	1. Business strategic planning 2. IT strategic planning 3. Reporting/ structure 4. Steering committee 5. Budgeting control 6. IT investment management 7. Project prioritization process
<b>Six business alignment maturity criteria</b>		
<b>Partnership maturity</b>	<b>Scope and architecture maturity</b>	<b>Skills maturity</b>

1. Business perception of IT value 2. Role of IT strategic planning 3. Shared goals, risks, rewards/penalties 4. IT program management relationship 5. Business sponsor	1. Traditional enablers 2. standard articulations: Functional, organisations and enterprise 3. Architectural transparency 4. Flexible management emerging technology	1. Innovation entrepreneurship 2. Local of power 3. Management style 4. Change readiness 5. Career crossover 6. Education, cross training 7. Social, political, trusting environment
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#### 2.5.5.2. Six Strategic alignment maturity model Criteria

This section provides a detailed discussion of six alignment criteria described by Luftman (2000). Each criterion is explained in detail; however, emphasis is made on those that directly relate to the study: communication, value measurement or metric and IT governance.

##### 1. Communication

Generally, the concept refers to the process where by people working together develop, sustain and manage meaning by the use of non-verbal and verbal symbols, and signs in a given context (Conrad & Poole, 2012). It is essential that there is frequent communication for people working on a common goal (Nyamwanza, 2014). However, effectiveness of communication depends on the ability of managers to communicate complicated ideas among each other simply (Duke II, 2013). Effective communication is easier spoken about than done (Hassell, 2014; Nyamwanza, 2014). Through the lack of communication many organisations experience serious problems in trying to move their organisation to the next level (Nyamwanza, 2014).

Communication plays a vital role in the performance of any organisation. Li, Guohui and Eppler (2009) argue that implementation effectiveness is positively affected by communication and negatively affected by conflicts (Li *et al.*, 2009). Li *et al.* (2009) explain that if employees of the organisation do not have the identical information or information does not reach all levels of the organisation, the level of agreement will be low.

The majority of managers are unable to effectively communicate the organisation's strategic plans to workers who were not part of the formulation, yet they are required to implement them (Dandira, 2011). Speculand (2009) explains four employee responses to new strategy implementation: resistance, disbelief, indifference and sport. Therefore, it is

important to ensure effective communication within the organisation for the organisation to succeed.

Likewise, communication between IT and business is paramount given today's everchanging business and IT environment that constantly challenges organisations (Luftman, Lyytinen & Ben-Zvi, 2015). Communication is necessary for the successful implementation of a strategy (Navedo-Samper, Ferrer & Rivera-Ruiz, 2013).

Communication between IT and business explains the degree and quality in sharing of thoughts, understanding, and information by business and IT employees (Luftman, 2000a). Furthermore, Luftman (2000a) states that communication allows both business and IT employees to have a mutual understanding. IT understands business and business understands IT, their relative strategies, priorities, risks, and how they can be achieved. Effective communication is important because in many cases IT tends to have little understanding of business; and appreciation of IT by business is very low, given the dynamic environment many organisations operate in (Luftman, 2015).

Evidence that communication between IT and business is important and is documented at length. The effectiveness of IT implementation depends on collaboration and exchanges business and IT managers have (Boynton, Zmud, & Jacobs, 1994). Communication among IT and business managers ensures that IT and business departments work in synergy

(Rockart, Earl & Ross, 1996). Supporting the importance of communication, Luftman (2000b) stated numerously that IT tends to lack understanding of business or vice versa.

Studies indicate that effective communication among IT and business increases the level of common understanding which provides a positive influence on IT and business alignment. Common understanding is key towards achieving co-ordination in the activities between IT and business (Boynton *et al.*, 1994; Reich & Benbasat, 2000a). Reich and Benbasat's (2000a) findings confirm Rockart *et al's.*, (1996) assertion that communication helps to incorporate and effectively harmonise IT and business plans. Communication among IT and business senior managers develops the ability to listen to each other, understand and respect each other better; in doing so the organisation is able to identify available resources that can be utilised to develop competitive advantage (Luftman *et al.*, 1999). However, though the importance of communication is acknowledged, communication between IT and business is still in crisis. According to

McGowan (2015) only 4 out of 100 IT leaders believe they communicate effectively with their business colleagues.

The absence of communication frequently leads to the lack of IT investment and lost opportunities (Luftman, 2000a). Supporting the arguments, senior managers and project managers agree that the absence of communication negatively affects project success (Project Management Institute, 2013).

## **2. Value Measurements**

Many IT functions are unable to demonstrate the value contributed by IT in a way that is clear and acceptable to businesses (Luftman, 2015). Measuring IT performance refers to the potential use of metrics that can help show the value contributed by IT in a way that is clear and acceptable to both business and IT. Too often, measuring tools used by IT differ from those used by business (Luftman, 2000a; 2015).

Measuring the performance of IT should be a concern both to IT and business managers should take seriously as it shows the effectiveness of IT and the value produced by IT to the business (Van Grembergen & De Haes, 2005). Research shows that approximately **75%** of IT projects fail to deliver intended value (Ward *et al.*, 2007). These failures are either caused by firms not undertaking benefit assessment, or the use of incorrect benefit analysis to measure IT value (Peppard, Ward, & Daniel, 2007). Sohal and Fitzpatrick (2002) list the lack of formal measurement of IT value as a cause of IT failure. Luftman (2015) argues that often organisations invest many resources in measuring performance factors, but little effort is put into taking the required actions based on the outcomes of the measurements.

Managers can use many tools, methods and best practices. Traditionally, methods include the return on investment (ROI), internal rate of return, payback method and net present value. These methods can be used where cost and benefits are easily calculated and can be represented in monetary terms. The methods help to identify the financial worth of IT systems or IT projects, but are limited. A more complex measure is the balanced scorecard (BSC). This value measure combines tangible and intangible values and can be applied to IT projects, IT investment and the IT department as a whole (Van Grembergen & De Haes, 2005).

### 3. IT governance

IT governance is a practice that is used to ensure that value from IT investments is derived exactly as planned in the IT strategy, and also helps to manage the IT process such that IT related risks are controlled (Weill & Ross, 2004a; Albayrak & Gadatsch, 2012). This concept is discussed in detail later in this section.

### 4. Partnership

This explains the relationship between IT and business, which covers the contribution of IT in the formulation of business strategy, the degree of confidence among IT and business employees and how each team sees the worth contributed by the other team.

### 5. Scope and architecture

This explains the capability of IT to offer a flexible architecture, which assesses and houses emerging technologies; leads business processes and provides personalised products or services that satisfy consumers' wishes and in-house necessities of the business.

### 6. Skills

This covers all actions that are concerned with performance criticism, training, motivating innovation and giving opportunities for profession growth. It also embraces the readiness of IT and business to cater for changes and the capabilities to learn new ideas.

Luftman (2000) went further to specify levels of alignment maturity to which alignment can be understood. See figure 2.7:

				Stage 5	
			Stage 4	Improved/managed process	Optimised
		Stage 3	Established focused process		
	Stage 2	Committed process			
Stage 1	Initial				

**Figure 2.6: Luftman's five levels of alignment maturity. Source: Luftman (2004)**

Luftman (2000) integrated six factors that influence SAM components with five levels of alignment maturity to demonstrate how alignment maturity is achieved (See figure 2.7).

	<p><b>Level 5: Optimized process:</b></p> <ul style="list-style-type: none"> <li>•COMMUNICATIONS: Informal pervasive</li> <li>•COMPETENCY/VALUE: Extended to external partners</li> <li>•GOVERNANCE: Integrated across the org &amp; partners</li> <li>•PARTNERSHIP: IT-business co- adaptive</li> <li>•SCOPE &amp; ARCHITECTURE Evolve with partners</li> <li>•SKILLS Education/careers/rewards across the organization</li> </ul>
	<p><b>Level 4: Improved/ managed process</b></p> <ul style="list-style-type: none"> <li>•COMMUNICATIONS: Bonding, unified</li> <li>•COMPETENCY/VALUE: Cost effective; Some partner value; Dashboard managed</li> <li>•GOVERNANCE: Managed across the organization</li> <li>•PARTNERSHIP: IT enables/drives business strategy</li> <li>•SCOPE &amp; ARCHITECTURE: Integrated with partners</li> <li>•SKILLS: Shared risk &amp; rewards</li> </ul>
	<p><b>Level 3: Established focused process</b></p> <ul style="list-style-type: none"> <li>•COMMUNICATIONS: Good understanding; Emerging relaxed</li> <li>•COMPETENCY/VALUE: Some cost effectiveness; Dashboard established</li> <li>•GOVERNANCE: Relevant process across the organization</li> <li>•PARTNERSHIP: IT seen as an asset; Process driver</li> <li>•SCOPE &amp; ARCHITECTURE: Integrated across the organization</li> <li>•SKILLS: Emerging value service provider</li> </ul>
	<p><b>Level 2: Committed</b></p> <ul style="list-style-type: none"> <li>•COMMUNICATIONS: Limited business/IT understanding</li> <li>•COMPETENCY/VALUE: Functional cost efficiency</li> <li>•GOVERNANCE: Tactical at Functional level, occasional responsive</li> <li>•PARTNERSHIP: IT emerging as an asset; Process enabler</li> <li>•SCOPE &amp; ARCHITECTURE: Transaction (e.g., ESS, DSS)</li> </ul>
	<p><b>Level 1Initial/Ad-Hoc process</b></p> <ul style="list-style-type: none"> <li>•COMMUNICATIONS: Business/IT lack understanding</li> <li>•COMPETENCY/VALUE: Some technical measurements</li> <li>•GOVERNANCE: No formal process, cost centre, reactive priorities</li> <li>•PARTNERSHIP: Conflict; IT a cost of doing business</li> <li>•SKILLS: Differs across functional organizations</li> </ul>

**Figure 2.7: Strategic alignment maturity model. Source: Luftman (2000)**

The maturity of each criterion can be traced using the maturity of attributes in each **Strategic alignment model (SAMM)**. According to Luftman (2000), maturity assessment is performed as follows:

- Criteria are measured individually by a team composed of IT and business managers. The purpose of the measure is to determine the level of the firm's strategic alignment. In this, criteria can either be found to be in levels 1, 2, 3, 4 or 5. This is done by assessing sub- attributes of each criterion.

- The entire team is expected to work on one criterion at a time until all criteria are assessed. The discussions among the team are very important as they provide a better understanding of where the organisation is currently and what the organisation can do to improve alignment.
- Having understood the current state of the organisation, the organisation uses the next higher level as a guide to find out what the firm should do next to reach the level.

However, to achieve alignment of IT and business strategies, and ensure that IT investments are well prioritised according to the needs of the business; organisations should have a strong IT governance practise (ITGI, 2005). The section below discusses the concept of IT governance as a practise supporting alignment of IT and business strategies.

#### **2.5.5.3. Achieving Alignment of IT and business strategies with IT Governance practise**

IT governance (ITG) is a subset of enterprise governance that deals with IT (Moeller, 2013). Governance is defined as the measurement and regular systems of management, responsibility, and supervision required to connect the difficulty and capability of the enterprise so as to attain the goals of the enterprise (Bloem, Van Doorn & Mittal., 2007). Therefore, IT governance explains a practice that is used to enforce the effectiveness and efficient use of IT as the organisation delivers its goals (Bloem *et al.*, 2007).

There is a positive relationship between the use of IT governance practices and alignment of IT and business strategies. Highly aligned organisations influence more mature IT governance practices (De Haes & Van Grembergen, 2009). The implementation of IT governance develops a reference point that includes structures, processes and relational capabilities that help managers to guide employees to perform their respective duties in support of alignment of IT and business strategies (De Haes & Van Grembergen, 2012; Schlosser, Wagner, Beimborn, & Weitzel, 2010; Wagner, 2014).

The practise has pillars and frameworks that guide organisations in the formulation and the implementation of the practise.

#### **○ Pillars of IT Governance practise for strategic alignment**

According to Luftman (2000), there are eight pillars of IT governance: business strategic planning; IT investment decisions, IT steering committee(s); the IT organisational structure; IT reporting, budgeting; the IT project prioritisation process and IT strategic planning. These pillars help to promote Alignment of IT and business strategies.

## **1. Information technology strategic planning**

IT strategic planning for any organisation is a document dictating the enterprise information architecture in the light of strategic considerations, such as the mission, goals, and priorities of the organisation, providing the required action plan to access systems and databases in organisational level (Akbarifar & Hamdi, 2016). Formal IT strategic planning ensures that the IT manager/ CIO starts by understanding the needs of the business before the strategy is developed (i.e the strategy is developed in line with business needs via the involvement of business representatives (Wu, Straub & Liang, 2015); this understanding is achieved through collaboration between IT and business across the organisation (Seetharaman, 2008). This collaboration eventually facilitates strategic alignment.

## **2. Business strategic planning**

In his article, Nickols (2011) provided various definitions for business strategic planning. Nickols (2011) explained that the definitions vary among authors, however, substantive issues are essentially the same. Nickols (2011) provided detailed explanations of business strategic planning which includes:

- Creating and periodically checking the organisation's mission and its business strategy;
- Developing strategic plan, financial goals, and objectives;
- Formulating big plans of action required to achieve these goals and objectives;
- Distribution of resources constantly in line with strategic directions, goals and objectives, as well as managing different levels of businesses;
- Deploying the organisation's missions and strategy;
- Monitoring results, measuring performance and making necessary adjustments;
- Reconsidering the organisation's mission, strategy, goals, and objectives

In the context of supporting alignment of IT and business strategies, the processes of business strategic planning should involve IT personnel. Luftman (1996) presents that among the challenges organisations are to overcome include bridging the gap between technical people and business people. Luftman *et al* (1999), identified the involvement of IT as the second important enabler that promotes strategic alignment between IT and business strategies. The collaboration between business executives and IT leaders provides the IT leaders with a platform to articulate about IT matters, which helps business executives to understand the role of IT within the organisation, and transfer of IT knowledge to business executives (Wu, Straub & Liang, 2015).



### **3. IT reporting organisational structure**

This explains the person to whom issues are to be reported. Nearly 30 years since the first CIOs (chief information officers) were appointed, it is still not clear whether the CIO should report to the CFO or CEO (Banker, Hu, Pavlou & Luftman, 2011). Rigoni (2010) argues that high returns can be obtained if there is a close connection between the CIO and CEO. IT reporting structure that permits the CIO to directly report to the CEO and/or the COO ensures that IT is part of the executive team, the level at which most strategy discussions occur. This therefore enables the CIO to obtain a global and holistic perspective on the organisation (e.g. its goals and strategies) (Wu, Straub & Liang, 2015). This confirms luftman's (2003) argument that companies reporting to the CEO or COO achieve better alignment compared to those who report to CFO.

### **4. Information technology steering committee**

IT steering committees are one of the "effective governance mechanisms for aligning IT-related decisions and actions with organisations' strategic and operational priorities" (Huang *et al.* 2010, p. 289). The committee is composed of senior executives who periodically meet to ensure that they align IT strategy with business strategy thereby linking business concerns with IT capabilities (Nolan, 1982). The IT steering committee made up of both senior business executives and IT executives can help to improve relationships between IT and business, therefore the strategic alignment (Bowen *et al.* 2007). The existence of the committee, provides a clear vision of IT initiatives and help senior business managers to understand the importance of IT in the organisations (Prasad *et al.*, 2010).

### **5. Information technology investment decision**

An IT investment decision is seen as a complex task since it has multiple stages that involve various factors at different levels within an organisation (Bower, 1970). The IT investment decision process is made up of a series of actions, which usually starts the identification of an IS-related disaster, problem or an opportunity, and ends in the approval of an IT project (Boonstra, 2003). When an investment decision is made, various stakeholders can use their power to internally or unintentionally influence the final investment decision. To ensure that IT investments are always made at the best interest of the organisations (e.g. IT investment made in alignment with the organisation's overall vision and goal). IT governance is the practice that gives rights and establishes the accountability framework for IT investment decisions (Weill & Ross, 2004). Since different stakeholders have the power to influence the final decision, appointing without

accountability could be suicidal. All major actors who are decision makers are held accountable for the outcome of the investment (Xue, Liang & Boulton, 2008).

## **6. Information technology project prioritisation**

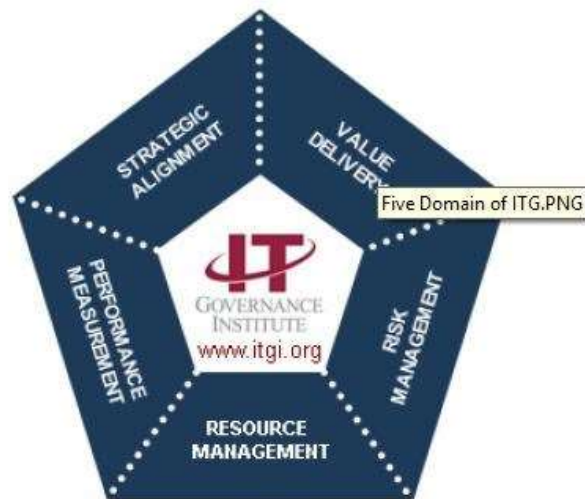
Organisations continuously struggle with problems related to allocating their development dollars to various competing projects. Project prioritisation is at the heart of these issues, as there is always more demand than money available; therefore, choosing the right project is important. The political environment further aggravates this situation where some managers get their projects done because they have the political power to get them on the agenda (Sowlati, Paradi & Suld, 2005). Rather allocation of resources to the project should be based upon both the immediate and long-term needs of an organisation. The process is driven by a strategic vision stemming from the top of the organisation - often the CIO, who serves as the head of IT operations - with the input of various departments. If done right, IT prioritisation could lead to a sensible plan that draws properly upon the resources within an organisation and executes on leaders' vision for the future of the business. Therefore, this ensures that IT investment decisions that are made are always in line with business goals and strategies of the organisations.

## **7. Information technology budgeting structure**

As the significance of IT is growing, organisations strive to do more with less. The most important part of IT effectiveness, is how necessary IT investments will be prioritised and financed. A well-developed IT budgeting structure can help the organisations operate more efficiently, provided more services that are responsive manage assets. The IT budget should be used as a planning document that will help the entire organisation prepare for future IT needs and communicate to external and internal stakeholders, the priorities those needs will support. This ensures that limited resources are aligned appropriately with the strategic goals of the organisations. In addition, an effective budgeting promotes accountability and creates spending guidelines for IT purchase (Eisenhower, 2013).

### **2.6. IT Governance frameworks**

In 2005, the IT Governance (ITG) Institute developed a model for ITG. The framework consists of five domains: strategic alignment, performance measurement, resource management, value delivery, and risk management. All five domains are important to achieve the goal of ITG (Zhou & Zhang, 2014). These are areas, which IT governance practice seeks to achieve with IT. These domains are reflected in the ITG model (See figure 2.8).



**Figure 2.8: IT Governance Model. Source: ITGI (2005)**

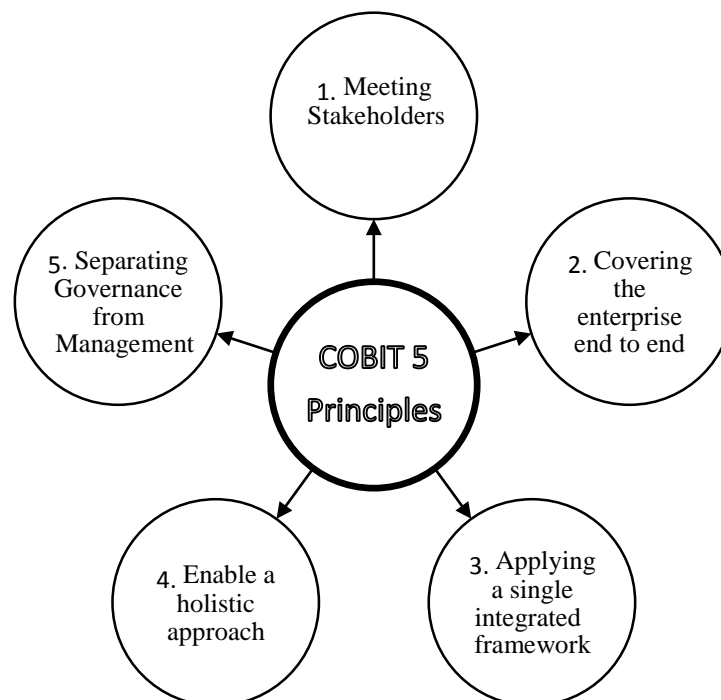
**Strategic alignment** can be described as the level to which the business goals, business mission, and business plans support or are supported by their IT complements (Reich & Benbasat, 1996b; Walter *et al.*, 2013). The practice however looks at other areas outside strategic alignment such as **IT resource management**; which is concerned with correct investment decisions, and the effective allocation and use of IT resources to deliver business strategies (Calder, 2005; ITGI, 2003). These IT resources are physical infrastructure, people, intellectual property, IT relationships and information (Weill & Ross, 2004b). The correct investment consists of the purchase of IT (products and services), and employing, developing and retaining staff (ITGI, 2003). **IT risk management** focuses on risk mitigation. The risks in IT come from the way people, IT infrastructure and policies are governed (Westerman, 2004). The objective of risk management is to safeguard IT assets, moderate risk and maximise opportunities for pursuing business strategies (Calder, 2005). Some risks are introduced by IT outsourcing (Bahli & Rivard, 2005). Good risk management can be broken into risk processes, infrastructure and capability. The risk process encompasses effective policies and procedures to identify measure and moderate the risk, while capability covers the infrastructure and required skills to implement the risk process (Westerman, 2004). **IT performance management** focuses on the benefits IT contributes to the business. It involves measuring the IT performance and the processes by which it is achieved (ITGI, 2003). Comparing achievements against objectives offers the organisation the opportunity to take appropriate corrective measures (Van Grembergen, 2000). The measures can be in financial terms (traditional) such as ROI and advanced multi-

dimensional approaches, or the Balanced Score Card (Van Grembergen, 2000). Despite these measures, measuring IT performance is complex (Brown, 2005). **IT value delivery** looks at the value delivered by IT in the organisation. Benefits derived from IT vary from quantitative (financial) to qualitative (Bush, Lederer, Li, Palmisano & Rao, 2009; Melville, Kraemer & Gurbaxani, 2004); these include revenue increase, risk reduction, employee productivity and customer satisfaction.

To implement the practice, frameworks have been developed. The frameworks most commonly used by organisations are ITIL, COBIT and ISO 27001 (Boamah-Abu, 2010). COBIT and ITIL are the most accepted frameworks internationally (Wessels & Loggerenberg, 2006). These are discussed briefly.

### 1. COBIT

COBIT refers to Control Objectives for Information and related Technology. The Information Systems Audit and Control Association (ISACA) developed this framework in 1996. The latest framework is COBIT 5, published in 2012 (Zhou & Zhang, 2014). COBIT 5 is used as a guide for IT governance and management. The framework is built around five principles: “meeting stakeholder needs; covering the enterprise end-to-end; applying a single integrated framework; enabling a holistic approach and separating governance from management” (See figure 2.9).



**Figure 2.9 -COBIT framework. Source: ISACA (2012)**

COBIT 5 brings together five principles that let the organisation develop an operative governance and management framework founded on a universal set of seven enablers (organisation structure, people skills-competencies, principles and framework, policies, processes, information, services-infrastructure-applications and culture-ethics-behaviour). These optimise information and technology investment and use for the advantage of stakeholders. The five principles are briefly discussed.

- **Meeting stakeholder needs:**

The first area in the cobit 5 calls organisations' management activities to be aligned with the needs of the stakeholders. Therefore, procurement of an IT-enabled investment must be aligned with the needs of the stakeholders. This will allow business leaders to define specific business requirements for an IT-enabled investment; therefore, justifying why the organisation should spend time and money on such investment. The justification should be linked with the organisations strategic and performance necessities.

- **Covering the enterprise end-to-end**

The framework fit in IT governance into enterprise governance: It covers all functions and processes within the enterprise; COBIT 5 does not focus only on the 'IT function', but treats information and related technologies as assets that need to be dealt with just like any other asset by everyone in the enterprise. It considers all IT-related governance and management enablers to be enterprise wide and end-to-end, i.e., inclusive of everything and everyone—internal and external—that is relevant to governance and management of enterprise information and related IT

- **applying a single integrated framework**

The framework is in line with the most recent relevant standards and frameworks used by enterprises: Enterprise: ISO/IEC 9000, COSO ERM, ISO/IEC 31000, COSO and ITrelated ITIL, ISO/IEC 38500, TOGAF, PMBOK/PRINCE2, CMMI, and ISO/IEC 27000. It allows organisations to use it as their overarching governance and management framework as it provides complete organisational coverage, providing a foundation to incorporate other frameworks, standards and practices used successfully.

- **Enabling a holistic approach**

Effective and efficient IT governance and management of the organisation needs a holistic method and should think through how the various components relate with each other. COBIT 5 describes a set of enablers that put into practice IT governance and management in the enterprise.

- **Separating governance from management**

The COBIT 5 framework embraces the difference between governance and management. These two areas cover unlike activities and are dissimilar organisational structures offering different services and serving dissimilar purposes. **Governance** is seen as the duty of the board of director under the guidance of the chairperson of the board. **Management** is seen as the duty of top management under the leadership of the CEO.

With the application of these five principles, the organisation can ensure that it maximises its information technology investments and benefits for stakeholders, excellent management and governance framework. The framework is a comprehensive and coherent set of guidelines for management and Governance of Enterprise IT (GEIT) with an understanding of alignment with strategic planning. Since the concept of strategic alignment seeks to bring harmony between business strategy and IT goals and processes, Cobit 5 delivers a family comprised of a set of guidelines, which includes frameworks guide, enabler guides, and the professional guides. Since the framework is inherently developed on five principles described above, strategic planning guidance is provided through the entire framework as well as supporting materials to ensure that these principles are accomplished (Ali, 2014). The product family is summarised in Table 2.7.

**Table 2.7: COBIT 5 Product Family Guidance. Source: Ali (2014)**

<b>COBIT 5 Product Family Guidance for Strategic Planning Summary</b>	
<b>COBIT 5 Product Family</b>	<b>Strategic Planning Guidance</b>
COBIT 5 framework	Generic enterprise goals
	Goal cascade for strategically aligning goals at all levels
	Governance objectives (guidance and mapping)
	IT generic goals
	Mapping between IT strategic goals and enterprise strategic goals
COBIT 5 enabler guides	Enabler goals
	Guidance on enabler-related stakeholders, life cycle and good practices
	Enabling processes for governance and management
<i>COBIT® 5 Implementation</i>	Recognising pain points and trigger events

	Stakeholder involvement
	Capturing stakeholder needs
	Details on Implementation life cycle phases (1-4)
<i>COBIT® 5 for Risk</i>	Understanding the associated risk in achieving the goals

## 2. ITIL

One other way to achieve alignment is for the IT department to turn itself into a service provider (Weiss & Anderson, 2004). This implies that IT is used as a solution by the organisation and IT is used as business function or for providing a new competitive advantage strategy. This is because the concentration of the organisation moves towards customers rendering high quality products and services at the lowest cost possible (Clarke, 1994). However, in order for an organisation to be regarded as an effective service provider, it needs to have high quality ITSM (Weiss & Anderson, 2004). ITSM deals with delivering and supporting IT services that are aligned with the business requirements of the organisation (Kashanchi & Toland, 2006). However, ITSM uses ITIL practise to improve service delivery and support. ITIL will support organisations in improving their IT services management (Weiss & Anderson, 2004). The Information Technology Infrastructure Library (ITIL) is a framework developed by the Office of Government Commerce (Cartlidge, Hanna, Rudd, Macfarlane, Windebank & Rance, 2007) in the 1980s (Zhou & Zhang, 2014). The framework is based on a set of complementary publication, which are very useful in providing guidance for industry sectors, for organisation types, models and technology architecture (Rahbar, Zeinolabedin & Afiati, 2013). The ITIL framework consists of five components (core publications):

### 1. Service strategy by

Understanding organisational goals and customer needs;

### 2. Service design by

Combining systems strategy into plans to deliver business objectives;

### 3. Service transition by

Developing and improving the capability for introducing new services into the supported environment;

### 4. Service operation by

Dealing with services in supported environments;

### 5. Continual service improvement by

Achieving large-scale improvement and services increments.

ITIL offers a fundamental framework for IT governance. The framework has attained great achievement; and is widely used by organisations all around the world because it concentrates on IT service delivery and continuous quality enhancement and evaluation. Using ITIL to improve organisational performance has several advantages because it provides a complete IT service life cycle (Zhou & Zhang, 2014).

## **2.6 Alignment of IT and business strategies and IT Governance relationship dilemma.**

The literature shows that achieving alignment of IT and business strategies or implementing IT governance practice yields similar outcomes. Kearns and Lederer (2003) and Masa'deh and Kuk (2009) studies show that achieving strategic IT/business alignment results in higher organisational performance. Similarly, studies by Weill and Ross (2004a), and Coltman, Tallon, Sharma and Queiroz (2015) show that effective implementation of ITG practices result in higher organisational performance. However, the two fields have been studied separately, and limited research shows relations that link their outcomes (Chaudhuri, 2011; Buchwald, Urbach & Ahlemann, 2014; Thompson, Ekman, Selby & Whitaker, 2014). The literature seldom shows how the two fields are interrelated (Orozco *et al.*, 2015). The SAMM treats IT governance as one of six alignment of IT and business strategies maturity components. The others are communication, value measurement, partnership, scope and architecture, and skills. Conversely, the IT governance model treats IT/business strategic alignment as one of five areas of IT governance. The others are resource management, performance management, risk management and value delivery.

Nonetheless, a large amount of research on alignment of IT and business strategies focuses on large organisations, particularly in developed countries (Alyahya & Suhaimi, 2013, Cragg *et al.*, 2007a). In SMEs little is known about the concept, particularly in developing countries (Alyahya & Suhaimi, 2013; Silvius, 2009).

## **2.7 Alignment of IT and business strategies in SMEs**

Firstly, suggested Alignment of IT and business strategies model by past research focus on large organisations (Silvius, 2009, Alyahya & Suhaimi, 2013). Although SMEs can also benefit from Alignment of IT and business strategies, these models may not be suitable for SMEs (Alyahya & Suhaimi, 2013). This is mostly expected as SMEs are considered as the smaller form of large enterprise; it is debated that due to their inherent differences, SMEs should assume a different management method (Blili & Raymond,



1993; Levy *et al.*, 2001; Lin *et al.*, 1993). This justifies need for dedicated models for SMEs. Similarly, Studies have demonstrated the need for frameworks that are specifically, dedicated for SMEs. Zhou and Zhang (2014) and Bergeron, Croteau, Uwizeyemungu and Raymond (2015), argued that many frameworks are mainly designed and are most appropriate for large organisations. This include frameworks such as COBIT and ITIL which are designed to be applied to large organisations; while in SMEs frameworks will be more suitable if they are refined (Huang, Zmud & Price, 2010). Moreover, unlike SMEs, large organisations have the required operational, human and financial muscle to put in to practise these frameworks:

COBIT and ITIL (Olutoyin & Flowerday, 2016). Attempts to develop SMEs'-directed framework like Cobit Quick-Start have had a poor adoption rate (ITGI, 2003).

Secondly, it is argued that, the IT governance concept is dedicated practise for large organisations. In SMEs the concept needs reconsideration (Devos, Landeghem, & Deschoolmeester, 2012). It follows that IT governance originates from IT strategic planning and IT management. The concept is linked to the organisation's corporate governance structure, which is SMEs are not familiar with. This claim is not surprising because there is evidence that the two cannot be treated equally. Welsh *et al.* (1982) maintain that theories that explain IT governance in large organisations cannot be employed in SMEs since they pose different financial, cultural and managerial questions.

Studies conducted, particularly using SAMM, have also shown bias. Ilmudeen (2011) conducted a study in three big companies based in Sri Lanka. These companies are the Hirdaramani Group, the Daya group, and EAM Maliban Textiles (Pvt) Ltd. All three companies are in the apparel industry in Sri Lanka. From all these companies, alignment was measured using six IT-business alignment maturity criteria and the results were as follows: Hirdaramani had a communication score of 3.83; competency, 4.14; governance, 3.71; partnership, 4.16; scope, 3.83; skills maturity, 4.14; and overall highest score of 3.97 on IT-business strategic alignment maturity. The Daya group with a communication score of 3.16 followed; competency was 3.28; governance, 2.28; partnership, 2.500; scope, 3.50; skills maturity, 3.42; and the overall score was 3.02. EAM Maliban Textiles (Pvt) Ltd had scores of: communication, 2.66; competency, 3.42; governance, 2.71; partnership, 2.50; scope score, 3.00; skills maturity, 2.28 and an overall score of 2.76.

The reason for the Hirdaramani Group's status is that they have implemented an entire, well-established system. Their system and IT service is fully structured. The Hirdaramani

Group possesses better IT governance, sophisticated IT infrastructure, a better steering committee, well-structured IT architecture, a strategic IT plan, a trained and skilled labour force, excellent IT risk management, better business continuity and a disaster recovery plan, secured IT systems, and a good help desk. The Daya group achieves an average rating; reflecting the average status of their IT infrastructure and architecture, strategic IT plan, secure IT systems, business continuity, and disaster recovery plan. The Daya group is still trying to align their IT and business strategies. Finally, EAM Maliban Textiles had the lowest maturity status of business-IT alignment. They had poor IT infrastructure, steering committee, IT architecture, strategic IT plan, (un)skilled labour force, business continuity and disaster recovery plans, IT risk management and security on IT systems.

Bowers (2006a) rated businesses in Durban (South Africa) on a maturity level of 2.9. This is an indication that organisations were at least adopting committed processes in developing strategic alignment maturity and were almost at the established focused maturity level. Further, in the study, it was seen that the age of the IT department was the best predictor of overall strategic alignment maturity and that respondent dynamics such as respondent position and respondent experience had little, or nothing to do with determining overall strategic alignment maturity (Bowers, 2006a). The study rated communication 2.86; value measurements 2.47; governance 2.82; partnership 2.91; scope and architecture 2.81; technology 3.24 and skills 2.87.

Similarly, Naidoo (2012) rated alignment of IT and business strategy at VW (SA) in 2011 at 2.94, which is indicative of higher level 2 in the 5-level maturity model. VW (SA) had adopted committed processes, in developing strategic alignment maturity by 2010; and was almost at an established focused maturity level. The overall alignment is slightly higher when compared to the study conducted by Bower (2006a). According to Luftman (2004), when an organisation reaches the committed phase, it displays many of the features of the attributes in the SAMM criteria for level 2. The study rated communication 3.08; value measurements 2.69; governance 2.80; partnership 2.94; scope and architecture 3.24, and skills 2.90.

## **2.9 Conclusion**

The literature review was conducted through a search that involved the use of theses, articles and textbooks from various university databases, through the UKZN electronic library. The importance of IT to SMEs for survival and success was discussed. Explaining the importance of IT, the literature began by defining the term SMEs. Then

the general importance of, and challenges faced by, SMEs was emphasised. The use of IT by SMEs was also discussed. The failure of IT to produce anticipated returns was emphasised, especially in SMEs. In line with poor IT performance, the significance of IT-business alignment for improving IT performance was acknowledged. Because of the difficulty involved in understanding the concept, it was defined in detail. Various definitions and terms were provided.

Having acknowledged IT-business alignment complexity, the chapter then focused on the core issue of the study: the study was narrowed to alignment of IT and business strategies. The chapter started by defining fundamental concepts of alignment of IT and business strategies. IT strategy and business strategy were discussed. Various approaches that can be used to align IT and business strategies followed. To this end, key models were argued: Strategic Grid, Earl's Audit Grid and Nolan's Life Cycle Model, then SAMM as a viable model for today's dynamic environment, IT governance, which is also good practice to align IT and business strategies were elaborated. Frameworks (COBIT5 and ITIL) which are used to implement IT governance were also deliberated. The dilemma between IT governance and alignment of IT and business strategies was summarised.

The last part of this study highlights lack of research in SMEs. This was explained in the context of previous studies and lack of best practises that can be used in SMEs to achieve alignment.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

Research methodology is defined as a strategy used to gather required data from the real world in order to provide answers to research questions, and test or develop a theory (Lee & Lings, 2008). All research is conducted around philosophical assumptions about what constitutes valid data and which research method is relevant for the development of knowledge in a particular study (Scotland, 2012). It is, therefore, important to know these assumptions in order to conduct and assess any research.

The chapter begins by explaining the concept of research; then various tools available to conduct research. In order to get a complete understanding of the research process, the researcher adopted the ‘research onion’ defined by Saunders, Lewis, Thornhill and Wilson (2009) as a guide. The research onion represents six layers: philosophy, approach, strategy, method, time horizon, technique and procedures. However, only the first five are explained. In this study, the research philosophy employed is positivism; the approach is deductive; the strategy is survey; the method is mono; the time horizon is cross-sectional and the technique is quantitative. These tools are elaborated on in this chapter.

The chapter ends by explaining the theoretical framework adapted to carry out the study. The framework is adapted from Luftman’s (2000) SAMM. To justify the relevance of SAMM to the study, various models that could have been used will be explained. These models are TAM, UTAUT, MIT90 and SAM. TAM and UTAUT look at the concept of IT and business alignment from the viewpoint of the readiness of the organisations to accept and use technology, while the study investigates the concept of IT and business alignment from the perspective of IT as aligned to the core business. Therefore, the two models could not be used in this particular study. MIT90 looks at the concept of strategic alignment from one perspective: how IT can be aligned with the business; while SAM relies on a mechanical view of the company and therefore lacks practical application. The adapted model makes use of three instead of six constructs from SAMM. These constructs are communication, value measurement and IT, and business strategic planning. The model further includes alignment practice as a construct. These adjustments seek to align SAMM to the SME context.

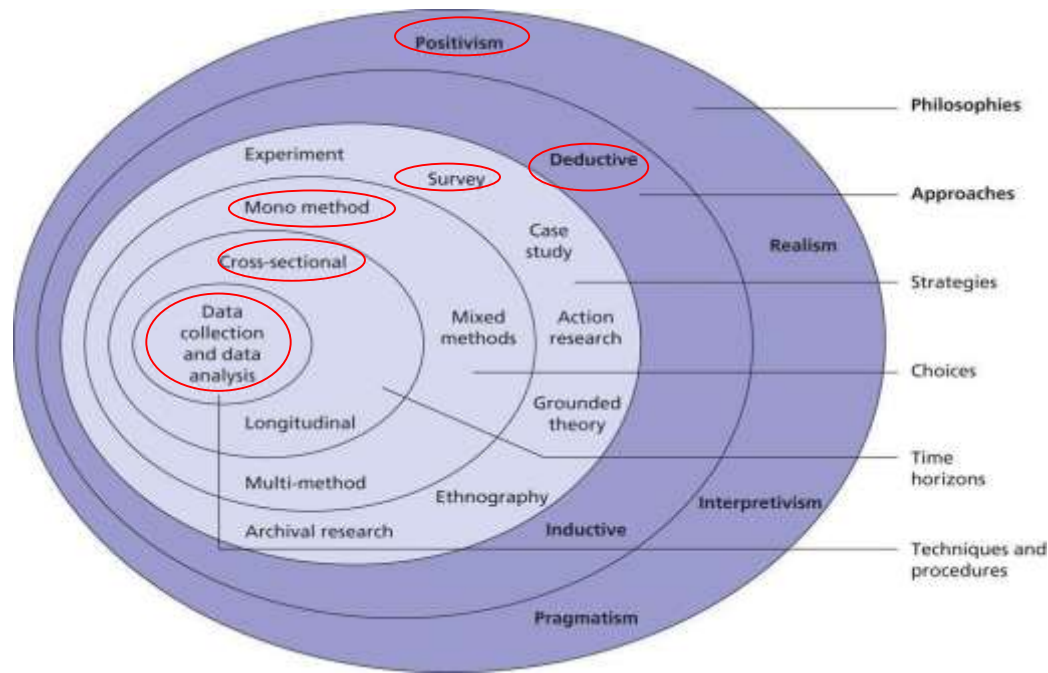
### **3.2 Philosophy of research**

Research is defined as the journey taken to discover the truth (Hair, Babin, Money & Samouel, 2003); the journey researchers undertake to increase their knowledge on a particular subject by finding the answer to questions (Saunders, Lewis, & Thornhill, 2003). However, this journey is influenced largely by human philosophical principle and beliefs (Collis & Hussey, 2003b). According to Bryman (2012), research philosophy talks about a set of beliefs regarding the nature of the reality being studied. The theories formulated provide an explanation for how the study will be conducted (Collis & Hussey, 2003b). Nonetheless, there is no mandatory research philosophy. Instead, the choice is guided by the nature of the research project (May, 2011). It is, therefore, essential for the researcher to understand philosophical views to conduct effective research.

The next section discusses the research onion. The research onion is used to guide the journey undertaken to investigate alignment of IT and business strategies in SMEs. Each layer will be explained, together with approaches that can be found in each layer. In each layer, the approach that is relevant is selected and justified. Towards the end of the section, the entire research method employed is illustrated.

### **3.3 The research onion**

Figure 3.1 represents the research onion developed by Saunders *et al.* (2009). The onion emphasises phases that must be followed when formulating an effective research methodology. Saunders *et al.* (2009) believes an effective research methodology begins by selecting an appropriate research philosophy, then research approach, strategy, method, time horizon and lastly, technique and procedures. Therefore, it can be concluded that to develop an effective research methodology, researchers should constantly consider all these layers and engage with them carefully.



**Figure 3.1: The research onion. Source: Saunders *et al.*, (2009)**

The explanation will cover various layers with each layer associated with an approach. Moving from the outermost layer to the inner layers, the explanation will cover the following layers: research philosophies, approaches, strategies, method, time horizon, and techniques and procedures. Though the research onion can help to obtain techniques for data collection and analysis, it is important that attention be focused on other layers of the research onion (Saunders *et al.*, 2009). Therefore, this chapter will cover all layers excluding data collection and analysis layer. These layers are carefully considered and engaged with in order to identify the approach that is relevant for this study, and eventually develops the research method. In each layer, the approach that is used will be stated and expanded on.

### 3.3.1 Research philosophy

Research philosophy can be defined as a whole system of thinking (Kraska, & Neuman, 2011). Also called a 'paradigm', it explains the way the world is seen through our perceptions, understandings and interpretations (Kuhn, 1962). Patton (1990) argues that a paradigm is a worldview, an overall perception and a way of simplifying the complexity of the real world. Paradigms assist to reason with and recognise the world we are living in (Thanawut, 2009).

The research onion presented by Saunders *et al.* (2009), presents four research paradigms/philosophies, which are positivism, realism, interpretivist and pragmatism. In this research, the researcher chose the positivism philosophical approach. This paradigm investigates facts, and is done with very minimum involvement from the individual conducting the investigation (Collis & Hussey, 2003a). The paradigm, which is rooted in the natural sciences, strives to discover facts about the world. Positivism is explained as a method that seeks to understand social science research by using scientific models of research (Denscombe, 2008). The paradigm assumes that scientifically developed theories are universally applicable and can be replicated (Collis & Hussey, 2003a). Likewise, in this study the researcher seeks to use an existing theoretical framework to guide the study. A tested and validated theoretical framework guides the study. The theoretical framework the researcher seeks to use is explained later in the chapter.

### **3.3.2 Research approaches**

The next layer of the research onion deals with research approaches. Research approaches explain how the problems are studied in order to come up with a solution. According to Saunders *et al.* (2009), the research approach layer presents two approaches: deductive and inductive approaches.

#### **□ Deductive approach**

According to Babbie (2010), the approach moves from general to specific; from the hypothetically expected to observations that examine whether the projected pattern actually happens. A hypothesis based on a theory that already exists is developed, and then an approach is developed to test the theory (Silverman, 2013). This approach is most appropriate for a positivist philosophy: involving the construction of a hypothesis and statistically testing the outcomes to an accepted degree of probability (Snieder & Lerner, 2009).

In this, the researcher begins with a wide range of ideas, or theories. Since this research is in Information Technology, a problem statement was formulated. The problem statement was broken down into research questions that will be investigated.

#### **□ Inductive approach**

According to Babbie (2010) the approach moves from a specific occurrence to general; from a set of specific observations or instances that lead to specific details or formulation of a theory. The observations initiate research and specific details are used to determine a pattern (Beiske, 2007). There is no theory that can be used to inform how data will be collected or guide the study; rather a theory is formulated later (Flick, 2011).

This approach may be compared to detectives at a crime scene where they hope to find evidence that will lead to an arrest. The detectives gather small pieces of evidence and information in or around the crime scene and based on that, a general idea is formulated which will point in a specific direction that will eventually lead to finding the criminal (Sekaran & Bougie, 2010).

In this study the researcher employed the deductive approach because the concept of strategic alignment already exists, and is already grounded in many theories and frameworks. The researcher is only concerned about a specific case of strategic alignment. Moreover, the deductive approach is most suitable for the positivist paradigm (Snieder & Larner, 2009) which has been used in the study.

### **3.3.3 Research strategies**

The research strategy explains the researcher's plans for carrying out the research (Saunders *et al.*, 2007). There are many research strategies: survey; experimental; action research; case studies; ethnography; grounded theory and archival research (Sekaran & Bougie, 2010).

- The survey method involves collecting data through questioning participants and then tabulating their answers. Mathematical methods are used to analyse and summarise data (Leedy & Ormrod, 2005). This method is usually employed where the researcher seeks to collect large amounts of data within a short period. The method uses tools such as questionnaires.
- Experimental research refers to the approach of constructing a research process that studies the outcomes of an experiment in contrast to the anticipated outcomes (Saunders *et al.*, 2007). The factors are studied and the outcomes are compared against expected outcomes (Saunders *et al.*, 2007).
- Case study research focuses on studying a single unit with the intention of obtaining the important features from which a conclusion will be drawn (Bryman, 2012). This strategy provides an insight into the case being studied (Silverman, 2013).
- Action research is a method employed by the researcher who seeks to initiate a process of change, with a progressive focus on closing the space between the required and the real state (Sekaran & Bougie, 2010).



- Grounded theory aims to realise a theory. The theory is defined as “the discovery of theory from data systematically obtained from social research”. (Glaser & Strauss, 1967: 2)
- Ethnographic research is a research method that involves observing real behaviour in a target population in the real world, rather than studying the population in a controlled or artificial environment (Hammersley, 2016). Ethnographic research is employed where a researcher wants to obtain answers on how people live. Questions formulated in this research are linked to the culture and behaviours of the subjects being investigated (Glatthorn & Joyner, 2005).
- Finally, archival research, also known as secondary research, involves using references and knowledge from secondary sources (Blanche, Durrheim & Painter, 2006). Secondary data is the type of data that is drawn from views of other researchers (Newman & Benz, 1998).

After carefully studying these different strategies, the survey research was found to be most appropriate for this study because the researcher wanted to obtain answers from a large population in minimal time, using a questionnaire as a tool.

### **3.3.4 Choices**

According to Saunders *et al.*, (2007), the choice includes making a selection from three options: mono, mixed method and multi-method.

As the names suggest, mono involves using single approach. Using a mono method, the researcher uses either a quantitative or a qualitative approach in a single study, or multiple studies, to collect and analyse data (Sekaran & Bougie, 2010). The mixed method involves using two or more research methods: both quantitative and qualitative methods would be used in single or multiple studies (Babbie & Mouton, 2003).

The multi-method option involves the use of several research methods (Bryman, 2012). The key variance between the multi and mixed methods is that multi methods are useful where the research is broken down into isolated parts, with each generating specific results (Feilzer, 2010); while the mixed method combines methods into single research that will produce one set of results (Flick, 2011).

Since the researcher simply wants to collect data from a large population and then use the SPSS to analyse the data and obtain results, a mono method approach was considered the most appropriate.

### **3.3.5 Time horizons**

Time horizons explains the time framework within which the project is expected to be completed (Saunders *et al.*, 2007). According to Bryman (2012), there are two categories of time horizon stated in the research onion and they are the cross sectional and longitudinal in nature. In the cross sectional research, the period in which the data is required is already established. Data is collected only at a specific time (Flick, 2011). On the other hand, longitudinal time horizons involve gathering of data over lengthy periods.

Data is collected repeatedly in one place (Goddard & Melville, 2004).

The cross-sectional research option was found to be appropriate because the research intends to take a snap shot of the state of IT-business alignment in SMEs at a particular time and thereafter draw a conclusion. Therefore, all data that is required is collected at one time.

### **3.3.6 Techniques and procedures**

#### **□ Quantitative research**

This approach is concerned with quantitative data (Flick, 2011). It is an approach where the researcher employs scientific methods such as experiments or surveys to gather knowledge (Creswell, 2013). It employs instruments that produce statistical data. This approach is informed by a positivist philosophy but it can also be used to study social phenomena such as subjective viewpoints and feelings (Bryman & Allen, 2011).

This approach is most effective where the researcher wants to draw a meaningful conclusion about a large population and present the results in a mathematical format that specifies the degree of confidence about the results (Abeyasekera, 2005). Similarly, where the number of respondents is large, statistical techniques can be easily employed to analyse the data. (May, 2011). Lewis-Beck, Bryman & Liao (2013) added that the approach can be used by a researcher that seeks to draw conclusions about a particular population but is finding it hard to gather data from the whole population.

#### **□ Qualitative research**

According to Bryman & Allen (2011), this approach is drawn from a constructivist philosophy. In this approach, it is important for the researcher to avoid influencing respondents' perceptions (Banister, 2011). This approach is effective where the researcher seeks to understand how respondents interpret their individual realities (Bryman & Allen, 2011). The approach explains details without using any statistical

methods. The approach helps to explain how individuals formulate ideas (Patton, 2005). This can be done through interviews, texts or asking open-ended questions (Feilzer, 2010). Feilzer (2010) further explains that the approach works best where the researcher sought to investigate social phenomena such as feelings instead of the causative relationship between established variables.

In this study, the research approach that was found to be appropriate was quantitative and therefore was adopted. It is best informed by a positivist paradigm used in the current study. Moreover, the researcher seeks to draw conclusions about a population by using a subset of that population: the researcher will use SMEs registered with the Border-Kei Chamber of Commerce in the Eastern Cape Province.

### **3.4 Choice of a Research methodology**

Moving from the outer to the inner layer of the research onion, the research method adopted can be summarised into:

- Philosophy - positivism
- Approach – deductive
- Strategy – survey
- Choice – mono method
- Time horizon – cross sectional
- Techniques and procedures – quantitative

### **3.5 Research model**

Many models are found in IS/IT (Bagozzi, 2007). Models are tools used to implement a Research strategy in pursuit of answers to questions posed (Krishnaswamy, 2004). Tools are used for guiding the process of converting research into practice (Nilsen, 2015). Some models are used to explain factors influencing IT acceptance, and use TAM and UTAUT (Davis, 1989, Venkatesh *et al.*, 2003). Others plan for IT implementation, such as the Strategic Grid (McFarlan & McKenney, 1983), while others are useful for aligning IT with the organisation's core business, such as the SAM (Henderson & Venkatraman, 1992a).

This chapter explains TAM and UTAUT. These models look at the concept of IT and business alignment from technological acceptance and use perspective (Davis, 1989; Venkatesh *et al.* (2003); and they are commonly used models in the IS literature (Algharibi & Arvanitis, 2011). The chapter then explains the MIT90, SAM and SAMM, as they are common in the literature of IT and business alignment from a perspective of IT and organisation core business. MIT90 used to be cited as the influential model in the

literature; and SAM because it is most widely cited in studies that investigate strategic IT-business alignment (Chan & Reich, 2007). SAMM is recognised as a powerful model for today's dynamic business and environment and disruptive technology (Brocke & Rosemann, 2014). Finally, the conceptual model adapted to guide this study is explained.

### **3.5.1 Common IS research models**

TAM, a model developed by Davis (1989) explains and predicts the individual's acceptance behaviour towards a new technology. The model is valuable in understanding why businesses/organisations accept a particular technology. TAM offers a foundation that can be used to trace how exterior variables influence attitude, belief, and intention to use a particular technology. Two intellectual beliefs theorised by TAM are perceived as: "ease of use and usefulness". TAM, as described by Davis (1989), argues that the individual's actual use of a technology is motivated indirectly or directly by the user's attitude, intentions, perception of the helpfulness of the technology, and perceived simplicity of the technology. TAM also suggests that exterior variables influence plan and actual use through mediated effects on perceived ease of use and perceived usefulness.

Denktash and Davis (2000) later revised TAM. They improved it by adding two extra constructs that are social influence practices (subjective norms, image, voluntaries, and experience) and cognitive instrumental practices (job relevance, output quality, and result demonstrability), which the initial TAM suffered. The model was called TAM2. The other useful theory to understand technology acceptance is the "Unified Theory of Acceptance and Use of Technology" (UTAUT). Venkatesh *et al.* (2003) built the model. The model is based on eight older models: the "Technology Acceptance Model" (TAM); the "Theory of Planned Behaviour" (TPB); the "Motivational Model" (MM); a model "combining the Technology Acceptance Model and the Theory of Planned Behaviour" (C-TAM-TPB); the Theory of "Reasoned Action" (TRA); "Innovation Diffusion Theory" (ID) and SocioCognitive Theory (SCT); and the Model of PC Utilization (MPCU).

The model offers a developed understanding of how the factors of intention and behaviour change over time. According to the UTAUT model, the intention to use a particular technology is influenced by social influences, effort expectancy and performance expectancy, while the usage behaviour is influenced by the intention and facility conditions. These models could not be used because they focus on the acceptance (Davis,

1989) and (Venkatesh *et al.*, 2003), and use (Venkatesh *et al.*, 2003) of a technology, and not alignment, which is the objective of the study.

Models, which were found relevant, are MIT90, SAM, and SAMM. The models were discussed in chapter 2. Nonetheless, SAMM was found to be most suitable for this study and therefore was used. The following section explains reasons why SAMM was chosen among these models. The concept of alignment of IT and business strategies evolves in a relationship where the organisation strives to tie IT and business in the light of continually changing business strategies and ever evolving technology (Papp, 1995; Luftman, 1996).

The concept explains the degree the organisation's IT and business support each other (Reich & Benbasat, 1996; Walter, Kellermanns, Floyd, Veiga, & Matherne, 2013). The MIT90 could not be used because the model looks at the concept of alignment of IT and business strategies from one perspective (Hsiao & Ormerod, 1998, Yetton *et al.*, 1994). Unlike the MIT90 that describes alignment from one perspective, the SAM acknowledges that alignment evolves in a relationship where IT and business support each other.

However, the SAM could not be used because the model relies on a mechanistic view of the company (Smaczny, 2001a). Thus, the model is not responsive and not flexible enough to accommodate ever-changing business and IT. The model treats alignment as an event and not a journey. Hence SAM is deemed too general and fails to provide a clear practical tool that can be used by managers in decision making (Avison *et al.*, 2004).

On the other hand, the SAMM focuses on maximising enablers and minimising the inhibitors that promote alignment through six criteria: "communication; value measurement; governance; partnership; scope and architecture, and skills" (Luftman, 2000: 12); to accomplish and sustain alignment of IT and business strategies. The six enablers and inhibitors were identified as the most important areas in order to achieve and sustain alignment (Luftman, Papp & Brier, 1999). SAMM continues to be the only tool to date that can be used to manage alignment in a turbulent environment (Brocke & Rosemann, 2014). Based on this, the SAMM was found to be the most appropriate for this study. However, the model was refined to fit SMEs. A conceptual model is explained below.

### **3.5.2 Research model: conceptual**

The research model used to guide the study is adapted from Luftman's (2000) SAMM. The SAMM was adjusted to suit the SME context because generally most alignment

models are designed for large organisations and cannot be used for SMEs since the two are different (Alyahya & Suhaimi, 2013). Blili & Raymond (1993) identified five specific reasons (information systems specificity; organisational; psycho-sociological; decisional and environmental) that substantiate the need to have a dedicated SME model.

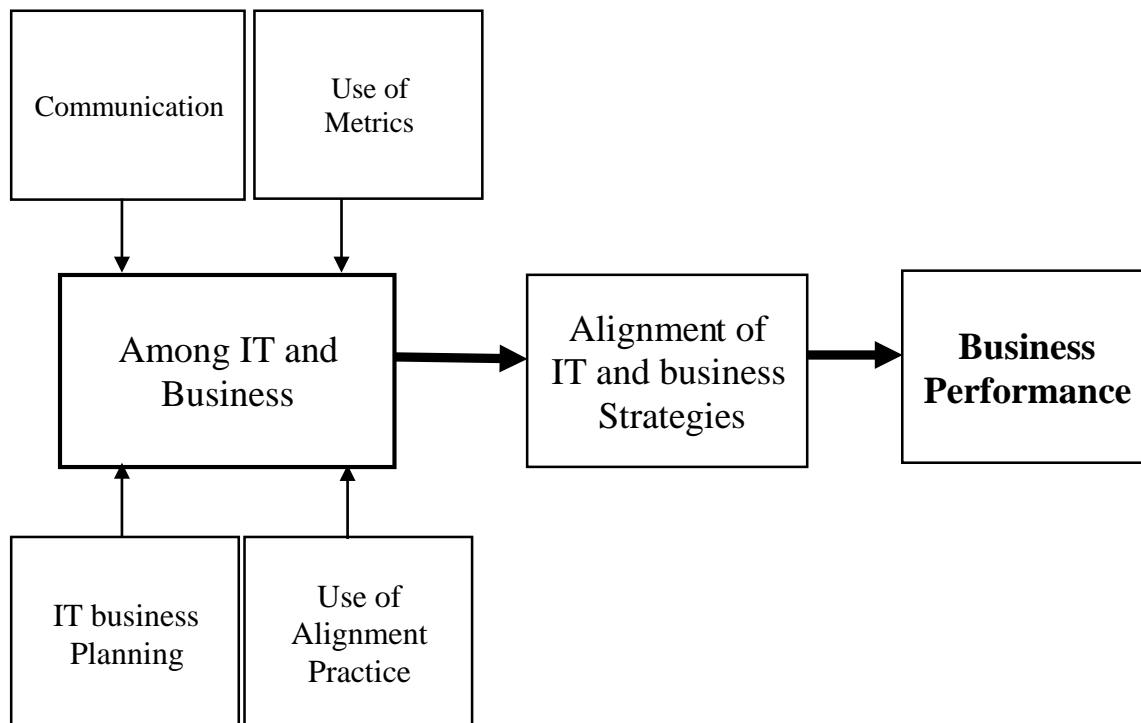
From six constructs of SAMM, three were selected: communication, value measurements, and IT business planning. This choice was made on the basis that three constructs instead of six will require a shorter questionnaire' which is very important because the shorter the questionnaire the higher the response rate (Kitchenham & Pfleeger, 2003). Additionally, a refined model will best suit SMEs. This conclusion is in line with Ayat et al.'s (2011) argument, which states that SMEs necessitate a refined framework especially applicable for SMEs. Communication was selected as it was found to be the first enabler of IT and business alignment (Luftman, Papp, & Brier, 1999); Value metric because it was identified that many IT projects fail because organisations do not perform assessments (Peppard, Ward, Daniel, 2007). IT business planning is of high importance to ensure that there is always close collaboration between IT and business in the light of today's ever changing business and IT and environment.

Zhou and Zhang (2014), Silvius (2009), and Bergeron *et al.*, (2015) state that many strategic alignment theories, models and frameworks are designed for large organisations. However, since this model has not been tested before, this will be highlighted as part of its limitations with a recommendation to test and possibly expand the model to six constructs. The criteria are investigated through a series of questions composed in a survey questionnaire.

Criteria that are going to be investigated are Communication between IT and business, IT value metrics and IT business planning Governance in an organisation, as they improve synchronisation between IT and business, and therefore alignment of IT and business strategies. Communication is high on the list of enablers of IT and business alignment. Communication means effective exchange of ideas by both IT and business strategists, and a clear understanding of what it takes to ensure successful strategies. Too often, there is little understanding of IT by business and business by IT. In addition, given the dynamic environment in which most organisations find themselves, ensuring ongoing knowledge sharing across organisations is paramount to achieve alignment between IT and business strategies (Luftman, 2000). Secondly, the studies demonstrated the necessity on the use of value metrics. It is therefore important for organisations to understand matrix put in

place to demonstrate value contributed by IT (Luftman, 2002; Van Grembergen & De Haes, 2005). Measuring IT value is a necessity since 75% of IT investment projects fail because firms do not perform assessments (Ward *et al.*, 2007; Peppard, Ward, Daniel, 2007; Sohal & Fitzpatrick, 2002). Formal IT or business strategic planning ensures that IT initiatives are made in line with business needs (Luftman (1996; Wu, Straub & Liang, 2015); and therefore alignment between IT and business is supported. This is provided by putting processing in place that encourages close relationship between IT and business (E.g. Business strategic planning with IT, IT strategic planning with business Reporting IT etc.). The survey will also investigate alignment models, frameworks and practices that are used by SMEs. These practises support alignment (Alyahya & Suhaimi, 2013).

Based on this, the research model was conceptualised in figure 3.2:



**Figure 3.2: Research model adapted from Luftman (2000, p.12)**

Maturity of communication, metrics and IT business planning are determined by using luftman's (2000) alignment maturity model summary. Since the model is applied in SMEs context in this case, only two levels (level 1 & 5) from the strategic alignment maturity model have been applied. However, for simplicity, level 5 will be presented as level **2**. In a scale of 1 to 2 (**representing level 5**) where:

**Level 1** = Does not fit the organisation or the organisation is very ineffective. This is found if the construct meet many of the characteristics of the attributes in the Strategic Alignment Maturity criteria for Level 1 (Luftman, 2000). (See table 3.1.)

**Level 2** = Strong level fit throughout the organisation, or the organisation is very effective.

This is found if the construct meets many of the characteristics of the attributes in the Strategic Alignment Maturity criteria for Level 2 (Luftman, 2000). (See table 3.1)

**Table 3.1: Alignment constructs & their attributes. Source: Luftman (2000)**

<b>Models construct</b>	<b>Level 1: Characteristics of the attributes</b>	<b>Level 2: Characteristics of the attributes</b>
Communication	<b>Poor/ ineffective:</b> <ul style="list-style-type: none"> <li>• Understanding of business by IT</li> <li>• Understanding of IT by business</li> <li>• Inter/ intra organisational learning</li> <li>• Protocol rigidity</li> <li>• Knowledge sharing/ Liaisons (s) effectiveness</li> </ul>	<b>Good/ effective:</b> <ul style="list-style-type: none"> <li>• Understanding of business by IT</li> <li>• Understanding of IT by business</li> <li>• Inter/ intra organisational learning</li> <li>• Relaxed protocol</li> <li>• Knowledge sharing Liaisons (s) effectiveness</li> </ul>
	<b>Result:</b> Business/IT lack understanding: ineffective communication	<b>Result:</b> Business and IT understand each other: Effective communication
Value measurement	<ul style="list-style-type: none"> <li>• IT metrics</li> <li>• Business Metrics</li> <li>• Service level agreement</li> <li>• Benchmarking</li> <li>• Formal assessment review</li> </ul>	<ul style="list-style-type: none"> <li>• IT metrics</li> <li>• Business Metrics</li> <li>• Service level agreement</li> <li>• Benchmarking</li> <li>• Formal assessment review</li> </ul>
	<b>Result:</b> Lack of formal measures: Lack of metrics	<b>Result:</b> Formal measures put in place: use of metrics
IT business planning	<ul style="list-style-type: none"> <li>• Business strategic planning with IT</li> <li>• IT strategic planning with business</li> <li>• Reporting IT</li> <li>• Budgeting control</li> <li>• IT investment management</li> </ul>	<ul style="list-style-type: none"> <li>• Business strategic planning with IT</li> <li>• IT strategic planning with business</li> <li>• Reporting IT</li> <li>• Budgeting control</li> <li>• IT investment management</li> </ul>
	<b>Result:</b> No formal process: IT business planning is not performed	<b>Result:</b> Formal process are in place: IT business planning is not performed



If the construct is found in **level 1**, it is highly unlikely that it will support alignment of IT and business strategies (Luftman, 2000); While if **level 2** is found, it is likely that it will support alignment of IT and business strategies.

The use of alignment practice also plays a key role in aligning IT and business. Generally alignment practice encourages a close relationship between IT and business (Alyahya & Suhaimi, 2013). Through use of these models, one can plan or even identify how best to bring close IT and business together. The use of various alignment practices is investigated.

**Table 3.2: Alignment practises**

Alignment Practises	Alignment models: <ul style="list-style-type: none"> <li>• MIT90</li> <li>• SAM</li> <li>• SAMM</li> </ul> Practise: IT governance-Cobit	SAMM (luftman,2000), (Rockart & Morton, 1984), Henderson & Venkatraman (1999), (Mcfarlane,1984), (Luftman & Brier, 1999)
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The next chapter (4) presents the data analysis together with the various tests used. Tests are applied in line with the theory i.e. so that results can be interpreted. Chapter 5 presents the interpretation. Likewise, the interpretation of the results is made in line with the theory. Discussion, conclusion and recommendations then follow.

### 3.6 Conclusion

In this chapter, different research approaches used to guide this study were discussed. The research onion was used. The outermost layer of the research onion to the innermost layer was described systematically. Six layers were identified: philosophy, approach, strategy, method, time horizon, techniques and procedures. The research philosophy selected for this study was positivism; the approach was deductive; the strategy was survey; the method was mono; the time horizon cross-sectional and the technique was quantitative. The purpose of this was to demonstrate the way in which the researcher connected research philosophies to the research problem.

The last part of this chapter explains the research model used to guide this study. The purpose of this section was to explain the tool that has been used to actually convert research into practice. The chapter discussed TAM, UTAUT, MIT90, SAM and SAMM. However, in this research TAM and UTAUT could not be used because these models are technology acceptance models. They look at the concept from the acceptance perspective

not core business. MIT90 could not be used because the model looks at the concept of strategic alignment from one perspective while SAM relies on the mechanical view of the organisation and therefore does not treat alignment as a journey. SAMM was found to be most appropriate for the modern world and was used in the study. However, the model was adjusted to fit SMEs; therefore, the model employed is conceptual.

The model employed is composed of constructs: communication between IT and business; value measurement employed by IT and business; and IT business planning and alignment practices. Lastly, a theory to interpret results of the research was formulated.

## **CHAPTER 4**

### **DATA ANALYSIS**

#### **4.1 Introduction**

The preceding chapter discussed the research methodology employed in this study. This chapter presents the analysis of data collected. From a population of 173, the sample size was calculated as 118. However, the actual data collected and analysed is 128 SMEs.

This chapter presents descriptive statistics and inferential statistics. The analysis was performed on data collected through four research objectives:

1. To determine the current state of communication between IT and business in SMEs
2. To determine metric put in place to measure value contributed by IT in SMEs;
3. To determine the current state of IT business planning in SMEs;
4. To determine practices (if any) that are used by SMEs to manage alignment between business and IT strategies.

Results are presented in tables, charts and graphs. One sample t-test, the Wilcoxon signed ranks tests was employed to determine whether the average agreement is statistically significant, while the Kruskal Wallis test is used to find out if there are statistically significant differences among two or many groups of an independent variable. Cronbach's alpha was used to measure reliability. The results are presented in detail below. Findings and discussions are presented in Chapter 5.

#### **4.2 Statistical Analysis performed**

For the convenience of the reader, in this chapter only some of the tables and graphs are presented. The rest of the tables and graphs are provided in the appendix. A short description of statistical analyses performed will be explained. The description is to provide the reader with basic insight on how data was analysed.

##### **4.2.1 Descriptive Statistics**

Descriptive statistics provides summarised data of the research. It presents important features of data collected in a simple and meaningful way (Fialho & Zyngier, 2014). These data can be best summarised using one number called the central tendency which is broken down into three values: the mean, median and mode (Weiss & Weiss, 2012). In this chapter, Means were used where appropriate and frequencies are represented in tables

and graphs. The mean, which is also known as the average, is found by adding all the data and dividing the total by the number of items (Cuevas, 2014). The mean has been used as it clearly specifies the position of the majority in the sample.

#### **4.2.2 Inferential Statistics**

According to Lowry (2014), inferential statistics help to measure the strength of the relationship between dependent variables and independent variables. In this study, one sample t-test, Wilcoxon signed Ranks test, The Kruskal Wallis and Mann-Whitney test were used.

##### **□ One sample t-test**

This examines “whether the mean of sample is statistically different from theorised population mean or a known mean” (Chiang, 2014). This test was used to determine whether the average agreement or disagreement among SMEs is statistically significant or not. Statistically significant means that, “the relationships between two or more observed variables are caused by something other than chance” (Nardi, 2015). This test was applied in the Likert scale questions to determine whether the average agreement or disagreement happened by chance or not.

The P-Value was used to determine the significance of the results. This is interpreted according to Leech *et al.*, (2005): If the results of the p-value are less than .05 then the result is considered statistically significant. In this study, all results that were significant were reported.

##### **□ Wilcoxon signed Ranks**

The Wilcoxon signed ranks was used where data was not normally distributed. Wilcoxon signed ranks is a non-parametric test used to test whether the mean value is significantly different from the central score of 3 (Kaur & Kumar, 2015). This was done by testing whether the mean agreement score is significantly different from ‘3’ – the neutral score. Statistically significant means that the relationships between two or more observed variables is caused by something other than chance (Nardi, 2015). To determine the significance of the results, the P-value was used. This is interpreted according to Leech *et al.*, (2005): If the results of the p-value are less than .05 then the result is considered statistically significant. In this study, if significance is found, it will be reported and elaborated on otherwise the insignificance of the results will be highlighted with no elaboration. Cases where the tests have been employed will be reported.

### □ Kruskal Wallis test

This is a rank-based non-parametric test that can be applied to find out if there are statistically significant differences among two or many groups of an independent variable on a continuous or ordinal dependent variable (McKight & Najab, 2010). This test was applied to test for differences in responses across the three categories of employee numbers (1-20 vs 21-50, 1 – 20 vs 51-200, and 21-50 vs 51-200). In questions where significant differences were found, the **Mann Whitney** test was used to determine where employee numbers had an impact on the results. Outputs of the tests on PAIRS of categories - only significant results will be reported.

Statistical tests performed are shown in detail in the addendum. A summary is shown below and explained under each section.

**In Section B** (questions investigating communication) below, all except question 11 and question 13 indicate that the mean agreement score differs across size of business. Excluding question 13, further analysis was performed to see what the differences are. The overall test is presented at the end of section B and is applied in all other sections. **In Section C** (questions investigating IT value measurements) differences between the three categories of employee numbers only occur in questions 19, 20 and 21 in which further analysis was performed. **In Section D** (questions investigating strategic IT-business planning), there are differences in all except question 34. Further analysis was performed on these questions. **In Section E** (questions investigating models-frameworks and practice), there were no differences for any of the questions across size of business.

#### 4.2.3 Reliability Analysis

Cronbach's coefficient alpha is used to test whether the combined measure is reliable (Leech *et al.*, 2005). According to Leech *et al.* (2005) Cronbach's alpha value should be above 0.7 for a combined measure to be declared reliable. Table 4.1 presents reliability tests performed on five key questions of the study with all tests on combined measure proving reliable.

**Table 4.1: Reliability statistics (See table C.11-15 in addendum C)**

Variables	Number of sub questions	Cronbach's alpha (a)
communication	8	.891
value measurement	7	.818
strategic IT-business planning	12	.934
alignment models	7	.966

alignment practice	3	.937
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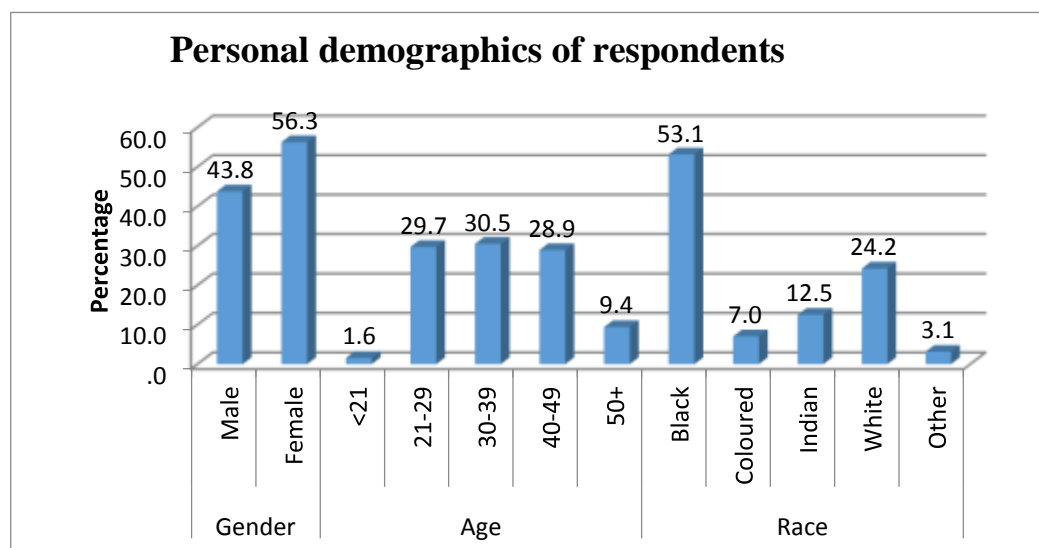
### 4.3 Results of data analysis

#### 4.3.1 Sections A: General information

This section provides general information about the sample. The section is broken down into two. The first part of the section covers the information about respondents, while the second part covers information companies. Information about respondents covers gender, age, race and position of the respondent, while information about companies, covers period of establishment, number of employees employed and the sector the organisations operates in.

##### 4.3.1.1 Personal information

Figures 4.1 and Table 4.2 present the demographic information of the respondents. The information covers the respondents' gender, age, race and position in the SMEs. The information about the respondents' gender, age and race is represented in one graph (see Figure 4.1).



**Figure 4.1: Respondents' Gender, Age and Race**

The majority of respondents were females (56.3%). Only 1.6 % of respondents were younger than 21 years; 9.4 % were older than 50 years; 28.9 % were between 40-49 years; 29.7 % were between 21-29 years; and 30.5 % were between 30-39 years. Finally, blacks represented 53.1% of the entire sample, followed by whites (24.2 %), Indians (12.5 %), and coloureds (7%). The information on respondents' position in the company is presented in Table 4.2

**Table 4.2: Respondents' positions in the company**

		Position			
		Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	CIO (IT manager)	1	.8	.8	.8
	<b>Senior IT manager</b>	7	5.5	5.6	6.3
	<b>IT manager</b>	19	14.	15.1	21.4
	<b>Senior manager</b>	13	10.	10.3	31.7
	<b>Business manager</b>	28	21.	22.2	54.0
	<b>Owner</b>	13	10.	10.3	64.3
	<b>Educator</b>	12	9.4	9.5	73.8
	<b>General employee</b>	28	21.	22.2	96.0
	<b>Consultant</b>	5	3.9	4.0	100.0
	<b>Total</b>	126	98.	100.0	
<b>Missing</b>	<b>System</b>	2	1.6		
<b>Total</b>		128	100		

The study received a high number of respondents from the 'other' (35.7 %: educator, general employee and consulted) category, followed by business managers (22.2 %), IT managers (15.1 %), owners (10.3 %) and senior business managers (10.3 %), and then senior IT managers (5.6 %). Nearly no CIOs participated in the study (0, 8%).

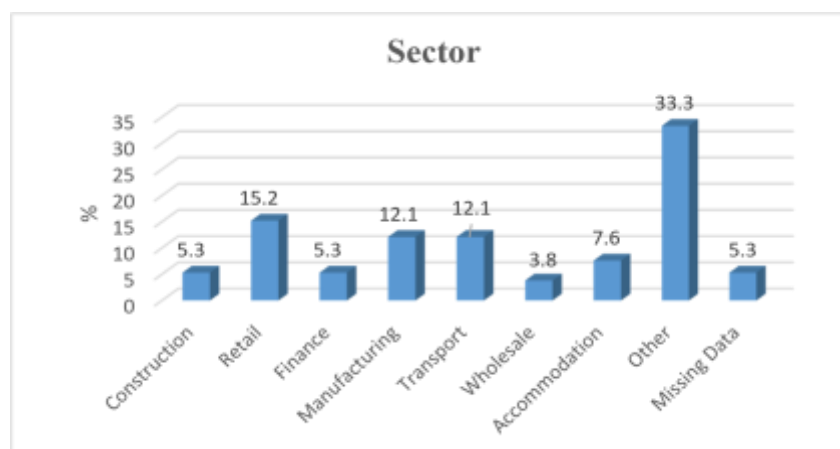
### 4.3.1.2 Business demographic

Figure 4.2 shows when the organisations were established and the size of the organisation. Figure 4.3 shows the sectors in the organisations. The majority (62, 5%) of organisations had been established for more than 7 years; Followed by those which had been established between 4-7 years previously. Only 2.3% of the organisations were less than 1-year-old. From 128 SMEs, 41.4% were small organisations; medium size organisations contributed 38.3%, while very small organisations contributed 20.3% of the sample.



**Figure 4.2: the organisations' years of operation and number of employees**

Figure 4.3 shows the economic sector in which each organisation operates. Thirty-three percent 'other' category, aside from the 'other' category, the study was dominated by the retail sector with 15.2 %, followed by the manufacturing (12.1%) and transport sectors (12.1); then accommodation (7.2%), construction with 5.4%, finance (5.3%) and wholesale (3.8%).



**Figure 4.3: Organisation's sector**



### 4.3.2 Section B: views on communication between IT and business in SMEs

The objective of this section was to understand the current state of communication between IT and business in SMEs. To investigate communication, attributes (measures of communication) from the model adopted were used to which eight sub-questions were formulated. The first set of questions assess the understanding of business by IT (Q.8 and Q.9) and IT by business (Q.10 and Q.11). The second set of questions assess Inter/Intra organisational learning (Q.12 and Q.13) and the last set of questions look at protocol rigidity and knowledge sharing/ liaisons between IT and business (Q.14 and Q.15).

#### Q.8. The IT personnel understand the needs of the organisation's customers

This question was investigating whether IT have an understanding of the organisation's customer needs. Results are summarised in table 4.3.

**Table 4.3: The understanding of organisation's customers by IT.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	21	16.4	16.7	16.7
	<b>Disagree</b>	13	10.2	10.3	27.0
	<b>Neutral</b>	27	21.1	21.4	48.4
	<b>Agree</b>	45	35.2	35.7	84.1
	<b>Strongly agree</b>	20	15.6	15.9	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents, 51.6 % (agree + strongly agree) reported that IT understand the organisation's customer needs; 27 % (disagree + strongly disagree) reported that IT do not understand; while 21.4 % had no opinion. The result shows that there is an agreement that respondents believe IT understands organisation's customers ( $Z = -1.563$ ,  $p = .118$ ) (see table C.1 & 2: **addendum C**). This indicates that respondents were divided about this question but there was agreement among respondents that IT understand organisation's customers.

The results further revealed that there is significant difference across size of business in the agreement that IT personnel understand the needs of customers ( $\chi^2 (2) = 6.703$ ,  $p=.035$ ) (see **table C.17: addendum C**). Specifically, those from a business with 51 – 200 employees, show significantly more agreement than those from a business with 21– 50 employees. See **table C.20 & 16: addendum C**. 1-20 vs 21-50 and 1 – 20 vs 51-200, no significant differences were found.

#### **Q.9. The competition encountered by the organisation is understood by the IT personnel**

This question was investigating the IT personnel’s understanding of the organisation’s competition. Results are summarised in **table 4.4**.

**Table 4.4: The understanding of the organisation’s competition by IT personnel**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	16	12.5	12.8	12.8
	<b>Disagree</b>	21	16.4	16.8	29.6
	<b>Neutral</b>	40	31.3	32.0	61.6
	<b>Agree</b>	37	28.9	29.6	91.2
	<b>Strongly agree</b>	11	8.6	8.8	100.0
	<b>Total</b>	125	97.7	100.0	
Missing	<b>System</b>	3	2.3		
Total		128	100.0		

Of the respondents to the question, 38.4 % (agree + strongly agree) reported that IT personnel understand the organisation’s competition; 29.6 % (disagree + strongly disagree) reported that IT do not; while 32 % were unsure or had no opinion. The result shows that there is an agreement that respondents believe IT understands organisation’s competition ( $Z = -.257$ ,  $p=.797$ ) (see **table C.1 & 2: addendum C**). This is an indication that respondents were divided about this question but there was an agreement among respondents that IT understand organisation’s competition.

The results further revealed that there is significant difference across size of business in the agreement that competition faced by the organisation from competitors is understood by the IT person/s ( $\chi^2 (2) = 6.969$ ,  $p=.031$ ) (see **table C.17: addendum C**). Specifically, those from a business with 51 – 200 employees, show significantly more agreement than

those from a business with 1-20 and 21-50 employees (See table C.19 & 16 and C.20 & 16: **addendum C**). 1-20 vs 21-50, showed no significant differences.

**Q.10.The organisation’s managers understands IT applications / systems that are used by the organisation.**

This question was investigating the understanding of organisation’s IT applications/ systems by business managers. Results are summarised in Table 4.5.

**Table 4.5: The understanding of organisation’s IT applications/ systems by managers.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	14	10.9	11.1	11.1
	<b>Disagree</b>	10	7.8	7.9	19.0
	<b>Neutral</b>	20	15.6	15.9	34.9
	<b>Agree</b>	66	51.6	52.4	87.3
	<b>Strongly agree</b>	16	12.5	12.7	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents, 65.1 % (agree + strongly agree) reported that organisation’s managers understand applications/ systems; 19 % (disagree + strongly disagree) reported that managers do not; while 15.9 % were unsure or had no opinion. The results show that there is significant agreement that the managers understand systems ( $Z = -3.878$ ,  $p=.000$ ) (see **table C.1 & 2: addendum C**). This tells us that majority of respondents believe managers understand applications/ systems that are used by their organisation.

The results further revealed that there is significant difference across size of business in the agreement that applications/ systems that are used by the organisation are understood by the organisation’s Managers ( $\chi^2 (2) = 10.218$ ,  $p=.006$ ) (see **table C.17: addendum C**). Specifically, those from a business with 51 – 200 employees, show significantly more agreement than those from a business with 21-50 (See table See table C.20 & 16: **addendum C**). 1-20 vs 21-50 and 1 – 20 vs 51-200 show no significant differences.

**Q.11. Managers understand the potential of applications/ systems that are used to improve the organisation's performance**

This question was investigating the understanding of applications/ systems that can be used to improve the performance of the organisation by business managers. Results are summarised in Table 4.6.

**Table 4.6: Managers' understanding of potential applications that can be used to improve that organisation's performance.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	14	10.9	11.1	11.1
	<b>Disagree</b>	17	13.3	13.5	24.6
	<b>Neutral</b>	34	26.6	27.0	51.6
	<b>Agree</b>	45	35.2	35.7	87.3
	<b>Strongly agree</b>	16	12.5	12.7	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents, 48.4 % (agree + strongly agree) reported that they understand applications that can be used to improve the organisation's performance; 24.6 % (disagree + strongly disagree) reported that they do not; while 27 % were unsure or had no opinion. The result shows that there is significant agreement that respondents believe managers understand potential applications that can be used to improve organisation's performance ( $Z = 2.109$ ,  $p=.035$ ) (see **table C.1 & 2: addendum C**). It is evident that majority of respondents believe managers understand potential applications that can be used to improve organisation's performance.

The results further revealed that there was no significant difference across size of business in the agreement that managers understand potential applications/ systems that are used to improve that organisation's performance ( $\chi^2 (2) = 5.579$ ,  $p=.061$ ) (see **table C.17: addendum C**). Therefore, no further analysis was performed.

**Q.12. Managers usually send E-mails to communicate recently implemented applications/ systems to employees.**

This question was investigating communication through e-mails to employees for newly implemented applications/ systems. Results are summarised in Table 4.7. **Table 4.7: The use of E-mails by Managers to communicate newly implemented applications to employees.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	11	8.6	8.7	8.7
	<b>Disagree</b>	23	18.0	18.3	27.0
	<b>Neutral</b>	17	13.3	13.5	40.5
	<b>Agree</b>	59	46.1	46.8	87.3
	<b>Strongly agree</b>	16	12.5	12.7	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents to the question, 59.5 % (agree + strongly agree) reported that e-mails are sent when new applications are implemented; 27 % (disagree + strongly disagree) reported that e-mails are not sent; while 13.5 % were unsure or had no opinion. The result shows that there is significant agreement that respondents believe managers usually send E-mails to communicate recently implemented applications/ systems to employees ( $Z = 3.161$ ,  $p=.002$ ) (see **table C.1 & 2: addendum C**). This indicates that respondents believe managers usually send E-mails to communicate recently implemented applications/ systems to employees.

The results further revealed that there is significant difference across size of business in the agreement that applications/ systems that are used by the organisation are understood by the organisation's Managers ( $\chi^2 (2) = 13.240$ ,  $p=.001$ ) (see **table C.17: addendum C**). Specifically, those from a business with 51 – 200 employees, show significantly more agreement than those from a business with 1-20 and 21-50 (See **table C.19 & 16 and C.20 & 16: addendum C**). 1-20 vs 21-50 shows no significant differences.

**Q.13. Managers frequently place notices on the notice board to communicate recently implemented applications/ systems to employees**

This question was investigating communication through notice boards of newly implemented application/ systems to employees. Results are summarised in Table 4.8.

**Table 4.8: Communicating through notice boards of newly implemented applications to employees.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	23	18.0	18.3	18.3
	<b>Disagree</b>	25	19.5	19.8	38.1
	<b>Neutral</b>	42	32.8	33.3	71.4
	<b>Agree</b>	28	21.9	22.2	93.7
	<b>Strongly agree</b>	8	6.3	6.3	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents, 28.5 % (agree + strongly agree) reported that newly implemented application are communicated through noticeboards; 38.1 % (disagree + strongly disagree) reported that no notices for newly implemented applications are displayed; while 33.3 % were unsure or had no opinion. The results show that there is significant disagreement that managers place notices on notice boards to communicate newly implemented systems to employees ( $Z=-2.211$ ,  $p=.027$ ) (see **table C.1 & 2: addendum C**). This shows that majority of SMEs believe managers do not use noticeboards to communicate newly implemented systems to employees.

The results further revealed that there was no significant difference across size of business in the agreement that managers usually place notices on the noticeboard to communicate newly implemented applications/ systems to employees ( $\chi^2(2) = 1.885$ ,  $p=.390$ ) (see **table C.17: addendum C**). Therefore, no further analysis was performed.

**Q.14. When there are business matters to be decided on, business and IT managers meet to decide on an IT- related solution for the business**

This question was investigating whether IT and business meet to determine an IT- related solution when there is a business related issue to be resolved. Results are summarised in Table 4.9.

**Table 4.9: How business issues are resolved by IT and business.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	12	9.4	9.5	9.5
	<b>Disagree</b>	11	8.6	8.7	18.3
	<b>Neutral</b>	30	23.4	23.8	42.1
	<b>Agree</b>	63	49.2	50.0	92.1
	<b>Strongly agree</b>	10	7.8	7.9	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents to the question, 57.9 % (agree + strongly agree) reported that when there are business issues to be solved, IT and business meet to decide an IT- related solution; 18.2 % (disagree + strongly disagree) do not agree; while 23.8 % were unsure or had no opinion. The result shows that there is significant agreement among respondents that when there are business matters to be decided on, business and IT managers meet to decide on an IT- related solution for the business ( $Z = -3.457$ ,  $p=.001$ ) (see **table C.1 & 2: addendum C**). The results tell us that majority of respondents believes that when there are business matters to be decided on, business and IT managers meet to decide on an IT- related solution for the business.

The results further revealed that there is significant difference across size of business in the agreement that when there are business issues to be resolved both business and IT managers meet to determine an IT solution related to the business ( $\chi^2 (2) = 11.418$ ,  $p=.003$ ) (see **table C.17: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 1-20 and 21-50 (See table

C.19 & 16 and C.20 & 16: **addendum C**). 1 – 20 vs 51-200 shows no significant differences.

**Q.15 When there are changes in the organisation’s objectives meetings are held together with IT managers**

This question was investigating whether IT and business hold meetings when there are changes in the organisation’s objective. Results are summarised in Table 4.10.

**Table 4.10: How organisational changes are addressed by business and IT.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	10	7.8	7.9	7.9
	<b>Disagree</b>	17	13.3	13.5	21.4
	<b>Neutral</b>	29	22.7	23.0	44.4
	<b>Agree</b>	51	39.8	40.5	84.9
	<b>Strongly agree</b>	19	14.8	15.1	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents 55.6 % (agree + strongly agree) reported that organisation changes are communicated to both IT and business through meetings; 21.4 % (disagree + strongly disagree) do not agree that meetings are held by IT and business; while 23 % were unsure or had no opinion. The result shows that there is significant agreement among respondents that when there are changes in the organisation’s objectives meetings are held together with IT managers ( $Z = -3.624$ ,  $p=.000$ ) (see **table C.1 & 2: addendum C**). The results show that majority of respondents believe that when there are changes in the organisation’s objectives meetings are held together with IT managers.

The results further revealed that there is significant difference across size of business in the agreement that when there are changes in the organisation’s Objectives/ goals/ opportunities, meetings are held together with IT managers ( $\chi^2 (2) = 11.418$ ,  $p=.003$ ) (see **table C.17: addendum C**). Specifically, those from a business with 51 – 200 employees, show significantly more agreement than those from a business with 21-50 (See table C.20 & 16). 1-20 vs 21-50 and 1 – 20 vs 51-200 show no significant differences.



In short, the results on Q.8 and 9, indicate that there is an agreement that IT understand business matters but responses were divided. Q.10 and Q.11, show that majority of respondents believe business managers understand IT matters. Q.12 and Q.13 show that majority of respondents believe there are processes in place to ensure continuous learning. Q.14 and Q.15 show that majority of respondents believe protocols are relaxed and there are good liaisons between IT and business. To conclude the results, then the one-sample t-test was applied. The overall measure shows that there is significant agreement ( $M=3.25$ ,  $SD = .882$ ) that there is effective exchange of ideas between IT and business strategists in SMEs ( $t(125) = 3.131$ ,  $p=.002$ ) (see **table C.11: addendum C**) i.e. there is communication.

The results further indicate that there is significant difference across size of business in the agreement that there is communication in between IT and business strategists ( $\chi^2(2) = 11.001$ ,  $p=.004$ ) (see table C.31: **addendum C**). Specifically, those from a business with 51 – 200 employees, show significantly more agreement than those from a business with 21-50 (See table C.32 & 30: **addendum C**). 1-20 vs 21-50 and 1 – 20 vs 51-200 show no significant differences.

#### **4.3.3 Section C: Views on metrics that measure the value of IT in SMEs**

The objective of this section was to understand the metrics that are used to measure value contributed by IT in SMEs. Seven sub-questions were formulated. The set of questions formulated investigate the use of value metric by the organisation (Q16-22).

**Q.16 The organisation uses the system's response time to gauge the value of IT** This question was investigating the use of the system's response time to measure value contributed by IT. Results are summarised in Table 4.11.

**Table 4.11: The system's response time as a measure of IT value.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	16	12.5	12.7	12.7
	<b>Disagree</b>	12	9.4	9.5	22.2
	<b>Neutral</b>	12	9.4	9.5	31.7
	<b>Agree</b>	67	52.3	53.2	84.9
	<b>Strongly agree</b>	19	14.8	15.1	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents, 68.3 % (agree + strongly agree) reported that the organisation uses systems response time as a measure of IT value; 22.2 % (disagree + strongly disagree) reported that they do not use the system's response; while 9.5 % were unsure or had no opinion. The result shows that there is significant agreement among respondents that organisation uses the system's response time to gauge the value of IT ( $Z = -3.690$ ,  $p = .000$ ) (see **table C.3 & 4: addendum C**). The results indicate that majority of respondents believe that organisation uses the system's response time to gauge the value of IT. The results further revealed that there was no significant difference across size of business in the agreement that the system's response time as a measure of IT value ( $\chi^2 (2) = 2.119$ ,  $p = .347$ ) (See **table C.22: addendum C**). Therefore, no further analysis was performed.

### Q.17 The organisation uses system availability to measure the value of IT

This question was investigating the use of system availability as a measure of IT value.

Results are summarised in Table 4.12.

**Table 4.12: The use of system availability as a measure of value contributed by IT.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	5	3.9	4.0	4.0
	<b>Disagree</b>	10	7.8	7.9	11.9
	<b>Neutral</b>	15	11.7	11.9	23.8
	<b>Agree</b>	63	49.2	50.0	73.8
	<b>Strongly agree</b>	33	25.8	26.2	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents, 76.2 % (agree + strongly agree) reported that system availability is used as a measure of value contributed by IT; 11.9 % (disagree + strongly disagree) reported that they do not use system availability as a measure; while 11.9 % were unsure or had no opinion. The results show that there is significant agreement that the organisation uses system availability to measure the value of IT ( $Z = -6.980$ ,  $p=.000$ ) (see **table C.3 & 4: addendum C**). This tells us that majority of SMEs believe the contribution of IT in the organisation is measured by its availability.

The results further revealed that there was no significant difference across size of business in the agreement that the use of system availability as a measure of value contributed by IT ( $\chi^2 (2) = 2.836$ ,  $p=.242$ ) (See **table C.22: addendum C**). Therefore no further analysis was performed.

**Q.18 The organisation uses financial indicators (return on investment (ROI), payback period etc.) to measure the value of IT.**

This question was investigating the use of financial indicators to measure the value of IT.

Results are summarised in Table 4.13.

**Table 4.13: The use of financial indicators to measure the value of IT.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	16	12.5	12.9	12.9
	<b>Disagree</b>	29	22.7	23.4	36.3
	<b>Neutral</b>	42	32.8	33.9	70.2
	<b>Agree</b>	28	21.9	22.6	92.7
	<b>Strongly agree</b>	9	7.0	7.3	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
Total		128	100.0		

Of the respondents, 29.9 % (agree + strongly agree) reported that financial indicators are used; 36.3 % (disagree + strongly disagree) report that financial indicators are not used; while 33.9 % were unsure or had no opinion. The results indicate that there is a disagreement among respondents regarding the use of financial indicators (return on investment (ROI), payback period etc.) to measure the value of IT ( $Z = -1.257$ ,  $p=.209$ ) (see **table C.3 & 4: addendum C**). This indicates that respondents were divided about this question but there was a disagreement among respondents.

The results further revealed that there was no significant difference across size of business in the agreement that the use of financial indicators to measure the value of IT ( $\chi^2 (2) = 4.008$ ,  $p=.135$ ) (See **table C.22: addendum C**). Therefore no further analysis was performed.

**Q.19 The organisation has processes in place to assess the value contributed by the organisation's IT as a whole (organisation's interconnected applications, systems, databases and networks). These measures sometimes extend to an organisation's partner.**

This question was investigating processes in place to measure the value of IT as a whole.

Results are summarised in Table 4.14.

**Table 4.14: Processes in place to measure the value of IT as a whole.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	19	14.8	15.3	15.3
	<b>Disagree</b>	28	21.9	22.6	37.9
	<b>Neutral</b>	37	28.9	29.8	67.7
	<b>Agree</b>	35	27.3	28.2	96.0
	<b>Strongly agree</b>	5	3.9	4.0	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
Total		128	100.0		

Of the respondents to the question, 32.2 % (agree + strongly agree) reported that there are processes in place to measure value of IT as a whole; 37.9 % (disagree + strongly disagree) report that there are no processes in place to measure value of IT as a whole; while 29.8 % were unsure or had no opinion. The results show us that there is a disagreement that organisations have put processes in place to find/ gauge the value contributed by IT as a whole in the organisation (organisation's interconnected applications, systems etc.) ( $Z = -1.857$ ,  $p = .063$ ) (see **table C.3 & 4: addendum C**). This shows that respondents were divided about this question but there was a disagreement among respondents.

The results further revealed that there is significant difference across size of business in the agreement that there are processes in place to measure the value of IT as a whole ( $\chi^2(2) = 10.422$ ,  $p = .005$ ) (See **table C.22: addendum C**). Specifically, those from a business with

51 – 200 employees show significantly more agreement than those from a business with 120 and 21-50 (See table C.23 & 21 and C.24 & 21: **addendum C**). 1-20 vs 21-50 show no significant differences.

**Q.20 Managers carry out benchmarking exercises (e.g. company visits) on IT services (e.g. help desk, system support) delivered to the organisation**

This question was investigating benchmarking exercises that carried out on IT services.

Results are summarised in Table 4.15.

**Table 4.15: Benchmarking exercises conducted on IT services.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	15	11.7	12.1	12.1
	<b>Disagree</b>	25	19.5	20.2	32.3
	<b>Neutral</b>	35	27.3	28.2	60.5
	<b>Agree</b>	44	34.4	35.5	96.0
	<b>Strongly agree</b>	5	3.9	4.0	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
Total		128	100.0		

Of the respondents to the question, 39.5 % (agree + strongly agree) reported that benchmarking exercises are carried out on IT services rendered to the organisation; 32.3 % (disagree + strongly disagree) report that there are no benchmarking exercises on IT services rendered; while 28.2 % were unsure or had no opinion. The result shows that there is a disagreement among respondents that managers carry out benchmarking exercises on IT services (e.g. Software installations, system support, help desk etc.) provided to the organisation ( $Z = -283$ ,  $p = .777$ ) (see **table C.3 & 4: addendum C**). The results tell us that respondents were divided about this question but there was disagreement among respondents that managers carry out benchmarking exercises provided to the organisation.

The results further revealed that there is significant difference across size of business in the agreement that managers carry out benchmarking exercises (e.g. company visits or

informal interviews etc.) on IT services (e.g. Software installations, system support, help desk etc.) provided to the organisation ( $\chi^2 (2) = 8.860$ ,  $p = .012$ ) (See table C.22: **addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 1-20 and 21-50 (See table C.23 & 21 and C.24 & 21: **addendum C**). 1-20 vs 21-50, shows no significant differences.

**Q.21 When new systems / applications are bought, IT managers hold meetings with business managers to discuss and assess the importance of the systems / applications**

This question was investigating whether IT managers educate business managers about newly purchased applications/systems. Results are summarised in Table 4.16.

**Table 4.16: Meetings held by IT managers to educate business managers about the newly purchased application.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	14	10.9	11.3	11.3
	<b>Disagree</b>	21	16.4	16.9	28.2
	<b>Neutral</b>	17	13.3	13.7	41.9
	<b>Agree</b>	53	41.4	42.7	84.7
	<b>Strongly agree</b>	19	14.8	15.3	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
Total		128	100.0		

Of the respondents, 58 % (agree + strongly agree) reported that IT managers hold meetings with business managers when a new application is purchased to educate them about the importance or relevance of the application. 28.2 % (disagree + strongly disagree) report that there are no meetings to help educate business managers about new purchased applications/systems; while 13.7 % were unsure or had no opinion. The result shows that there is significant agreement among respondents when new applications/systems are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevance of the applications/systems ( $Z = - 2.694$ ,  $p = .007$ ) (see **table C.3 & 4: addendum C**). The results indicate that majority of respondents believe that

when new applications/systems are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevance of the applications/systems.

The results further revealed that there is a significant difference across size of business. This was in the agreement that, when new applications/systems are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevance of the applications/systems (e.g. Software installations, system support, help desk etc.) provided to the organisation ( $\chi^2 (2) = 9.308$ ,  $p = .010$ ) (See table C.22: **addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 1-20 and 21-50 (See table C.23 & 21 and C.24 & 21: **addendum C**). 1-20 vs 21-50, shows no significant differences.

#### **Q.22 The organisation make use of service level agreements (SLAs) for the services offered by IT**

This question was investigating the use of service level agreements on services rendered by IT. Results are summarised in Table 4.17.

**Table 4.17: The use of service level agreements for services rendered by IT.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	15	11.7	11.9	11.9
	<b>Disagree</b>	29	22.7	23.0	34.9
	<b>Neutral</b>	19	14.8	15.1	50.0
	<b>Agree</b>	35	27.3	27.8	77.8
	<b>Strongly agree</b>	28	21.9	22.2	100.0
	<b>Total</b>	126	98.4	100.0	
Missing	<b>System</b>	2	1.6		
Total		128	100.0		

Of the respondents, 50 % agreed that service level agreements are used for services rendered by IT; 34.9 % disagreed; while 15.1 % were unsure or had no opinion. The result shows that there is significant agreement among respondents that organisations use service level agreements (SLAs) for the services rendered by IT ( $Z = - 2.114$ ,  $p = .034$ )



(see **table C.3 & 4: addendum C**). The results tell us that majority of respondents believe that organisations use service level agreements (SLAs) for the services rendered by IT.

The results further revealed that there was no significant difference across size of business in the agreement that the use of financial indicators to measure the value of IT ( $\chi^2 (2) = 4.285, p = .117$ ) (See **table C.22: addendum C**). Therefore no further analysis was performed.

In short, the results on Q.16 and Q.17 indicate that majority of respondents agree there are IT metric put in place. Q.18 indicates that there was disagreement with the use of financial measures but respondents were divided. Q.19 indicates that there was disagreement with the use of measures that demonstrate the value of IT as a whole but respondents were divided. Q.20 indicates that there is disagreement with the use of benchmarking but respondents were divided. Q.21 indicates that the majority agree that formal meetings are held for every new application/ system purchased. Lastly, Q.22 majority of respondents agree that formal documents (SLAs) are used to demonstrate value offered by IT. Likewise, to conclude the results, a combined measure was performed to determine the overall view on the use of metrics. The reliability was found reliable (see **table 4.1**). The overall test indicates that there is significant agreement ( $M = 3.2271, SD = .81763$ ) on the use of metric by SMEs ( $Z = -3.353, p = .001$ ) (see **table C.12: addendum C**). This indicates that majority of respondents agree with the use of performance indicators.

The results further indicate that there is significant difference across size of business in the agreement that there are metrics put in place to demonstrate value contributed by IT ( $\chi^2 (2) = 10.008, p = .007$ ) (see **table C.31: addendum C**). Specifically, those from a business with 51 – 200 employees, show significantly more agreement than those from a business with 21-50 (See **table C.32 & 30: addendum C**). 1-20 vs 21-50 and 1 – 20 vs 51-200, shows no significant differences.

#### **4.3.4 Section D: Views on the level of IT Business planning in SMEs**

The objective of this section was to understand the current state of IT and business strategic planning. Twelve sub-questions were formulated. The first set of questions assess the participation of IT in business strategic planning IT (Q.23, Q. 24 and Q.25) and participation of business in IT strategic planning (Q.26, Q.27 and Q.28). The second set of questions assess formal reporting of IT plans to business strategies (Q.29. Q.30 and Q.31) and the last set of questions assess how IT investment decisions are made (Q.32, Q.33 and Q.34).

**Q.23 The organisation perform formal strategic business planning at the functional division levels with some contribution from IT**

This question was investigating IT participation in strategic business planning at the functional level. Results are summarised in Table 4.18.

**Table 4.18: The participation of IT in strategic business planning at the functional level.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	18	14.1	14.5	14.5
	<b>Disagree</b>	7	5.5	5.6	20.2
	<b>Neutral</b>	41	32.0	33.1	53.2
	<b>Agree</b>	52	40.6	41.9	95.2
	<b>Strongly agree</b>	6	4.7	4.8	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
Total		128	100.0		

Of the respondents, 46.7 % agree that IT participates in strategic business planning at the functional level; 20.1 % disagree; while 33.1 % were unsure or had no opinion. The result shows that there is agreement among respondents that organisations do formal strategic business planning at the functional unit levels with some IT participation ( $Z = -1.173$ ,  $p = .241$ ) (see **table C.5 & 6: addendum C**). The results reveal that respondents were divided about this question but there was an agreement among respondents organisations do formal strategic business planning at the functional unit levels with some IT participation.

The results further revealed that there is significant difference across size of business in the agreement that the organisation does formal strategic business planning at the functional unit levels with some IT participation ( $\chi^2(2) = 13.306$ ,  $p = .001$ ) (see **table C.26: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 1-20 and 21-50 (see **table C.27 & 25 and C.28 & 25: addendum C**). 1 – 20 vs 21-50 shows no significant differences.

**Q.24 The organisation performs formal strategic business planning through all the organisation's departments with contribution from IT.**

This question was investigating IT participation in business strategic planning across all the organisation's departments. Results are summarised in Table 4.19.

**Table 4.19: Participation in business strategic planning across all organisation's departments.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	16	12.5	12.9	12.9
	<b>Disagree</b>	13	10.2	10.5	23.4
	<b>Neutral</b>	36	28.1	29.0	52.4
	<b>Agree</b>	47	36.7	37.9	90.3
	<b>Strongly agree</b>	12	9.4	9.7	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
Total		128	100.0		

Of the respondents to the question, 47.6 % agree that IT does participate in business strategic planning performed across all organisation departments; 23.4 % disagree; while 29 % were unsure or had no opinion. The result shows that there is agreement among respondents that organisations do formal strategic business planning across all the organisation's departments with IT participation ( $Z = -.1608$ ,  $p = .108$ ) (see **table C.5 & 6: addendum C**). The results tell us that respondents were divided about this question but there was agreement among respondents that organisations do formal strategic business planning across all the organisation's departments with IT participation.

The results further revealed that there is significant difference across size of business in the agreement that organisation does formal strategic business planning across all the organisation's departments with IT participation ( $\chi^2(2) = 12.674$ ,  $p = .002$ ) (see **table C.26: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 1-20 and 21-50 (see table

C.27 & 25 and C.28 & 25: **addendum C**). 1 – 20 vs 21-50 show no significant differences.

**Q.25 The organisation performs formal strategic business planning through all the organisation's departments together with their partners**

This question was investigating whether business strategic planning is performed across all organisation departments (IT included); and with organisation's partners. Results are summarised in Table 4.20.

**Table 4.20: Business strategic planning conducted across the organisation and which extends to partners.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	19	14.8	15.3	15.3
	<b>Disagree</b>	19	14.8	15.3	30.6
	<b>Neutral</b>	40	31.3	32.3	62.9
	<b>Agree</b>	43	33.6	34.7	97.6
	<b>Strongly agree</b>	3	2.3	2.4	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
Total		128	100.0		

Of the respondents, 37.1 % agreed that business strategic planning is done across the organisation's departments with the organisation's partners; 30.6 % disagreed; while 32.3 % were unsure or had no opinion. The result shows that there is a disagreement among respondents that organisations do formal strategic business planning across all the organisation's departments with their partners ( $Z = - 989$ ,  $p = .323$ ) (see **table C.5 & 6: addendum C**). The results tell us that respondents were divided about this question but there was disagreement among respondents that organisations do formal strategic business planning across all the organisation's departments with their partners.

The results further revealed that there was no significant difference across size of business in the agreement that the organisation does formal strategic business planning across all the organisation's departments with their partners ( $\chi^2 (2) = 2.280$ ,  $p = .320$ ) (see **table C.26: addendum C**). Therefore no further analysis was performed.

**Q.26 The organisation performs IT strategic planning at the functional level with contribution from business.**

This question was investigating business participation in IT strategic planning at the functional level. Results are summarised in Table 4.21.

**Table 4.21: Participation of business in IT strategic business planning at the functional level.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	19	14.8	15.7	15.7
	<b>Disagree</b>	22	17.2	18.2	33.9
	<b>Neutral</b>	30	23.4	24.8	58.7
	<b>Agree</b>	42	32.8	34.7	93.4
	<b>Strongly agree</b>	8	6.3	6.6	100.0
	Total	121	94.5	100.0	
Missing	System	7	5.5		
Total		128	100.0		

Of the respondents, 41.3 % agree that business participates in IT strategic business planning at the functional level; 33.9 % disagree; while 24.8 % were unsure or had no opinion. The result shows that there is a disagreement among respondents that organisations do IT strategic planning at the functional level with business participation ( $Z = -.432$ ,  $p = .666$ ) (see **table C.5 & 6: addendum C**). The results tell us that respondents were divided about this question but there was disagreement among respondents that organisations do IT strategic planning at the functional level with business participation.

The results further revealed that there is significant difference across size of business in the agreement that the organisation does IT strategic planning at the functional level with business participation ( $\chi^2 (2) = 12.344$ ,  $p = .002$ ) (see **table C.26: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 1-20 and 21-50 (see **table C.27 & 25 and C.28 & 25: addendum C**). 1 – 20 vs 21-50 show no significant differences.

**Q.27 The organisation perform IT strategic planning through all departments in the organisation**

This question was investigating business participation in IT strategic planning performed across all the organisation departments. Results are summarised in Table 4.22.

**Table 4.22: Business participation in IT strategic planning performed across all organisations' departments.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	18	14.1	14.5	14.5
	<b>Disagree</b>	18	14.1	14.5	29.0
	<b>Neutral</b>	35	27.3	28.2	57.3
	<b>Agree</b>	42	32.8	33.9	91.1
	<b>Strongly agree</b>	11	8.6	8.9	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
<b>Total</b>		128	100.0		

Of the respondents, 42.8 % agree that business does participate in IT strategic planning performed across all organisation departments; 29 % disagree; while 28.2 % were unsure or had no opinion. The result shows that there is agreement among respondents that organisations do IT strategic planning across all departments in the organisation ( $Z = -.442$ ,  $p = .658$ ) (see **table C.5 & 6: addendum C**). The results indicate that respondents were divided about this question but there was agreement among respondents that organisations do IT strategic Planning across all departments in the organisation.

The results further revealed that there is significant difference across size of business in the agreement that the organisation does IT strategic planning across all departments in the organisation ( $\chi^2 (2) = 12.593$ ,  $p = .002$ ) (see **table C.26: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 21-50 (see **table C.28 & 25: addendum C**). 1-20 vs 21-50, and 1 – 20 vs. 51-200 show no significant differences.

**Q.28 The organisation performs IT strategic planning through all departments in the organisation together with their partners**

This question was investigating whether IT strategic planning is performed across all organisation departments and with organisation's partners. Results are summarised in Table 4.23.

**Table 4.23: IT strategic planning is conducted across the organisation and extends to partners.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	25	19.5	20.2	20.2
	<b>Disagree</b>	20	15.6	16.1	36.3
	<b>Neutral</b>	44	34.4	35.5	71.8
	<b>Agree</b>	29	22.7	23.4	95.2
	<b>Strongly agree</b>	6	4.7	4.8	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
Total		128	100.0		

Of the respondents, 28.2 % agree that IT strategic planning is done across the organisation's departments with the organisation's partners; 36.3 % disagree; while 35.5 % were unsure or had no opinion. The results show that there is a significant disagreement that the organisation performs formal IT strategic planning through all the organisation's departments together with their partners ( $Z = -2.512$ ,  $p = .012$ ) (see **table C.5 & 6: addendum C**). This tells us that majority of respondents believe IT strategic planning does not extend to the entire organisations and their partners.

The results further revealed that there is significant difference across size of business in the agreement that organisation does IT strategic planning across all departments in the organisation with their partners ( $\chi^2(2) = 13.551$ ,  $p = .001$ ) (see table C.26: **addendum C**). Specifically, those from a business with 51 – 200 employees, show significantly more agreement than those from a business with 21-50 (see table C.28 & 25: **addendum C**). 120 vs. 21-50, and 1 – 20 vs 51-200 show no significant differences.

### Q.29 IT plans are reported to financial managers (accountant or CFO)

This question was investigating whether IT plans are reported to financial managers.

Results are summarised in Table 4.24.

**Table 4.24: The reporting of IT plans to financial managers.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	11	8.6	8.8	8.8
	<b>Disagree</b>	16	12.5	12.8	21.6
	<b>Neutral</b>	21	16.4	16.8	38.4
	<b>Agree</b>	61	47.7	48.8	87.2
	<b>Strongly agree</b>	16	12.5	12.8	100.0
	<b>Total</b>	125	97.7	100.0	
Missing	<b>System</b>	3	2.3		
Total		128	100.0		

Of the respondents, 61.6 % agreed that IT plans are reported to financial managers; 21.6 % disagreed; while 16.8 % were unsure or had no opinion. The result shows that there is significant agreement among respondents that IT plans are reported to financial managers (accountant or CFO) ( $Z = -.3.786$ ,  $p = .000$ ) (see **table C.5 & 6: addendum C**). The results indicate that majority of respondents believe that IT plans are reported to financial managers (accountant or CFO).

The results further revealed that there is significant difference across size of business in the agreement that IT plans are reported to financial managers e.g. CFO or accountant ( $\chi^2(2) = 9.644$ ,  $p = .008$ ) (see **table C.26: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 1- 20 and 21-50 (see **table C.27 & 25 and C.28 & 25: addendum C**). 1 – 20 vs 21-50 show no significant differences.



### Q.30 IT plans are reported to operational managers (COOs or supply chain managers)

This question was investigating whether IT plans were reported to operational managers.

Results are summarised in Table 4.25.

**Table 4.25: IT plans reported to operational manager.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	20	15.6	16.3	16.3
	<b>Disagree</b>	20	15.6	16.3	32.5
	<b>Neutral</b>	38	29.7	30.9	63.4
	<b>Agree</b>	37	28.9	30.1	93.5
	<b>Strongly agree</b>	8	6.3	6.5	100.0
	<b>Total</b>	123	96.1	100.0	
Missing	<b>System</b>	5	3.9		
Total		128	100.0		

Of the respondents, 36.5 % agree that IT plans are reported to operation managers; 32.6 % disagree; while 30.9 % were unsure or had no opinion. The results show us that there is disagreement that IT plans are reported to operational manager (COO) ( $Z = -835$ ,  $p = .404$ ) (see **table C.5 & 6: addendum C**). This shows that respondents are divided but there is a disagreement that IT plans are reported to the operational manager.

The results further revealed that there is significant difference across size of business in the agreement that IT plans are reported to operational managers e.g. COO or supply chain managers ( $\chi^2 (2) = 6.495$ ,  $p = .039$ ) (see **table C.26: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 21-50 (see **table C.28 & 25: addendum C**). 1-20 vs 21-50, and 1 – 20 vs 51200 show no significant differences.

### Q.31 IT plans are reported to senior business managers (CEOs, directors or owners)

This question was investigating whether IT plans are reported to senior business managers. Results are summarised in Table 4.26.

**Table 4.26: Reporting of IT plans to senior business managers**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	9	7.0	7.3	7.3
	<b>Disagree</b>	9	7.0	7.3	14.5
	<b>Neutral</b>	25	19.5	20.2	34.7
	<b>Agree</b>	46	35.9	37.1	71.8
	<b>Strongly agree</b>	35	27.3	28.2	100.0
	<b>Total</b>	124	96.9	100.0	
Missing	<b>System</b>	4	3.1		
Total		128	100.0		

Of the respondents, 65.3 % agree that IT plans are reported to key business managers (e.g. CEO); 14.6 % disagree; while 20.2 % were unsure or had no opinion. The results show that there is significant agreement that IT plans are reported to senior business managers ( $Z = -5.503$ ,  $p=.000$ ) (see **table C.5 & 6: addendum C**). This tells us that majority of SMEs believe IT plans are reported to senior business managers (CEO, director).

The results further revealed that there is significant difference across size of business in the agreement that IT plans are reported to senior manager business manager e.g. CEO, director or owner ( $\chi^2 (2) = 9.036$ ,  $p = .011$ ) (see **table C.26: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 21-50 (see **table C.28 & 25: addendum C**). 1-20 vs 21-50, and 1 – 20 vs 51-200 show no significant differences.

### Q.32 Budgeting for applications/systems

This question was investigating how IT applications or systems are funded. Results are summarised in Table 4.27.

**Table 4.27: Table on how application/ systems are funded.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	8	6.3	6.5	6.5
	<b>Disagree</b>	3	2.3	2.4	8.9
	<b>Neutral</b>	32	25.0	26.0	35.0
	<b>Agree</b>	55	43.0	44.7	79.7
	<b>Strongly agree</b>	25	19.5	20.3	100.0
	<b>Total</b>	123	96.1	100.0	
Missing	<b>System</b>	5	3.9		
Total		128	100.0		

Of the respondents, 65 % agree that IT applications/ systems are budgeted for; 8.9 % disagree; while 27 % were unsure or had no opinion. The results show us that there is significant agreement that applications or systems are budgeted for ( $Z = -5.781$ ,  $p=.000$ ) (see **table C.5 & 6: addendum C**). This tells us that majority of respondents believe applications/ systems are budgeted for.

The results further revealed that there is significant difference across size of business in the agreement that applications/ systems are budgeted for ( $\chi^2 (2) = 8.240$ ,  $p=.016$ ) (see **table C.26: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 1- 20 and 21-50 (see **table C.27 & 25 and C.28 & 25: addendum C**). 1 – 20 vs 21-50 show no sign differences.

**Q.33 Decisions on which systems / applications to buy first are determined by the organisation's needs**

This question was investigating how much IT investments (applications/ systems) are driven by the organisation's needs. Results are summarised in Table 4.28.

**Table 4.28: How decisions on IT investments are taken**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	9	7.0	7.4	7.4
	<b>Disagree</b>	5	3.9	4.1	11.5
	<b>Neutral</b>	17	13.3	13.9	25.4
	<b>Agree</b>	73	57.0	59.8	85.2
	<b>Strongly agree</b>	18	14.1	14.8	100.0
	<b>Total</b>	122	95.3	100.0	
Missing	<b>System</b>	6	4.7		
Total		128	100.0		

Of the respondents, 74.6 % agreed that IT investment is driven by the organisation's needs: 11.5 % disagree; while 13.9 % were unsure or had no opinion. There is significant agreement that decisions of which IT applications/ systems to purchase are driven by the organisation's needs ( $Z = -5.938$ ,  $p=.000$ ) (see **table C.5 & 6: addendum C**). This indicates that majority of respondents believes IT investment decisions are driven by needs of the organisation.

The results further revealed that there is significant difference across size of business in the agreement that decisions on which applications/ systems to buy are first driven by the organisation's needs ( $\chi^2 (2) = 12.186$ ,  $p=.002$ ) (see **table C.26: addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 1- 20 and 21-50 (see **table C.27 & 25 and C.28 & 25: addendum C**). 1 – 20 vs 21-50 show no significant differences.

### Q.34 Decisions on which systems / applications to buy first are driven by their estimated value to the business

This question was investigating IT investments (application/ system) driven by their estimated value. Results are summarised in Table 4.29.

**Table 4.29: The prioritisation of IT investments driven by estimated value**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	12	9.4	9.8	9.8
	<b>Disagree</b>	13	10.2	10.6	20.3
	<b>Neutral</b>	42	32.8	34.1	54.5
	<b>Agree</b>	43	33.6	35.0	89.4
	<b>Strongly agree</b>	13	10.2	10.6	100.0
	<b>Total</b>	123	96.1	100.0	
Missing	<b>System</b>	5	3.9		
Total		128	100.0		

Of the respondents, 45.6 % agreed IT investment priorities are driven by estimated value; 20.4 % disagreed; while 34.1 % were unsure or had no opinion. The result shows that there is significant agreement among respondents that decisions on which applications/ systems to buy are first determined by the estimated value ( $Z = -.2.278$ ,  $p=.023$ ) (see **table C.5 & 6: addendum C**). The results tell us that majority of respondents believe that decisions on which applications/ systems to buy are first determined by the estimated value.

The results further revealed that there was no significant difference across size of business in the agreement that the organisation does formal strategic business planning across all the organisation's departments with their partners ( $\chi^2(2) = 3.972$ ,  $p=.137$ ). Therefore no further analysis was performed.

In short, the results on Q.23 and Q.24 indicate there is an agreement that there is IT involvement in business strategic planning across the organisation but the respondents were divided. However, concerning the involvement of IT business planning that extends to partners (Q.25) there was disagreement but respondents were divided. The results on

the involvement of business strategist's in IT strategic planning (Q.26-Q.28) indicate that there is agreement with the involvement of business at functional level, while disagreement across department. In both cases, respondents were divided. However, pertaining the involvement of business in IT strategic planning that extends to partners, majority of respondents disagreed. Concerning reporting IT plans business managers (Q.29-Q.31), the results indicate that majority of respondents agree that plans are reported to the CFO and the CEO while there was disagreement reporting IT plans to the COO. Lastly, on IT investment, (Q.32-Q.34), majority agree that IT investments are budgeted and decisions are driven by the needs or value IT will provide. To conclude, the overall test was performed and shows that there is significant agreement ( $M= 3.2413$ ,  $SD = .85741$ ), and that there is IT business planning in SMEs ( $Z= -3.240$ ,  $p= .001$ ) (see **table C.1.3: addendum C**). This indicates that formal planning in SMEs is performed.

The results further indicate that there is significant difference across size of business in the agreement that there are metrics put in place to demonstrate value contributed by IT ( $\chi^2 (2) = 16.670$ ,  $p= .000$ ) (see table C.31: **addendum C**). Specifically, those from a business with 51 – 200 employees show significantly more agreement than those from a business with 21-50 (See table C.32 & 30: **addendum C**). 1-20 vs 21-50, and 1 – 20 vs 51-200, show no significant differences.

#### **4.3.5 Section E: Views on alignment Practices in SMEs**

The objective of this section was to investigate alignment practices that are used (if any) to manage alignment of IT and business strategies in SMEs. Ten sub-questions were formulated. The first set of questions assess the use of alignment models (Q.35-Q.40). The second part looks at the use of Cobit framework (Q.41), while the third part looks at the use of IT steering committee as an instrument to align IT and business strategies (Q.42). The fourth part looks at the IT portfolio management (Q.43), while the last part looks at a broader view that looks at the use of IT governance as an instrument (Q.44)

### Q.35 The use of the Strategic Grid

This question was investigating use of the strategic grid to align IT and business strategies. Results are summarised in Table 4.30.

**Table 4.30: The use of the strategic grid to align IT and business strategies.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	36	28.1	34.6	34.6
	<b>Disagree</b>	5	3.9	4.8	39.4
	<b>Neutral</b>	26	20.3	25.0	64.4
	<b>Agree</b>	29	22.7	27.9	92.3
	<b>Strongly agree</b>	8	6.3	7.7	100.0
	<b>Total</b>	104	81.3	100.0	
Missing	<b>System</b>	24	18.8		
Total		128	100.0		

Of the respondents, 35.6 % agreed that they use the model to align IT and business strategies; 39.4 % disagreed; while 25 % were unsure or had no opinion. The results show us that there is a significant disagreement that organisations use the strategic grid to manager alignment ( $Z = - 2.992$ ,  $p=.003$ ) (see **table C.7 & 8: addendum C**). This indicates that respondents believe organisations do not use the strategic grid to manage alignment.

### Q.36 The use of the Strategic Alignment Model

This question was investigating the use of the Strategic Alignment Model to align IT and business strategies. Results are summarised in Table 4.31:

**Table 4.31: The use of the Strategic Alignment Model to align IT and business strategies.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	34	26.6	33.7	33.7
	<b>Disagree</b>	9	7.0	8.9	42.6
	<b>Neutral</b>	34	26.6	33.7	76.2
	<b>Agree</b>	20	15.6	19.8	96.0
	<b>Strongly agree</b>	4	3.1	4.0	100.0
	<b>Total</b>	101	78.9	100.0	
Missing	<b>System</b>	27	21.1		
Total		128	100.0		

Of the respondents to the question, 23.8 % agreed that they use the model to align IT and business strategies; 42.6 % disagreed; while 33.7 % were unsure or had no opinion. The results show that there is a significant disagreement that organisations use the strategic alignment model to manage alignment ( $Z = -4.165$ ,  $p=.000$ ) (see **table C.7 & 8: addendum C**). This indicates that respondents believe organisations do not use the strategic alignment model to manage alignment.



### Q.37 The use of the Strategic Alignment Maturity Model

This question was investigating the use of the Strategic Alignment Maturity Model to align IT and business strategies. Results are summarised in Table 4.32.

**Table 4.32: The use of the Strategic Alignment Maturity Model to align IT and business strategies**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	36	28.1	37.1	37.1
	<b>Disagree</b>	6	4.7	6.2	43.3
	<b>Neutral</b>	27	21.1	27.8	71.1
	<b>Agree</b>	26	20.3	26.8	97.9
	<b>Strongly agree</b>	2	1.6	2.1	100.0
	<b>Total</b>	97	75.8	100.0	
Missing	<b>System</b>	31	24.2		
Total		128	100.0		

Of the respondents, 28.4 % agreed that they use the model to align IT and business strategies; 43.3 % disagreed; while 27.8 % were unsure or had no opinion. The results show that there is a significant disagreement that organisations use the strategic alignment model to manage alignment ( $Z = -4.294$ ,  $p=.000$ ) (see **table C.7 & 8: addendum C**). This indicates that respondents believe organisations do not use the strategic alignment maturity model to manage alignment.

### Q.38 The use of the Achieving and sustaining IT-business alignment

This question was investigating whether achieving and sustaining IT-business alignment is used to align IT and business strategies. Results are summarised in Table 4.33.

**Table 4.33: The use of the Achieving and sustaining IT-business alignment to align IT and business strategies**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	37	28.9	37.0	37.0
	<b>Disagree</b>	6	4.7	6.0	43.0
	<b>Neutral</b>	36	28.1	36.0	79.0
	<b>Agree</b>	15	11.7	15.0	94.0
	<b>Strongly agree</b>	6	4.7	6.0	100.0
	<b>Total</b>	100	78.1	100.0	
Missing	<b>System</b>	28	21.9		
Total		128	100.		

Of the respondents, 21 % agreed that they achieve and sustain IT and business alignment in order to align IT and business strategies; 43 % disagreed; while 36 % were unsure or had no opinion. The results show us that there is a significant disagreement that organisations use the achieving and sustaining IT-business alignment model to manage alignment ( $Z = -4.308$ ,  $p=.000$ ) (see **table C.7 & 8: addendum C**). This indicates that respondents believe organisations do not use the achieving and sustaining IT-Business alignment model to manage alignment.

### Q.39 The use of the Eclectic approaches to IT and business alignment

This question was investigating the use of eclectic approaches to IT and business alignment to align IT and business strategies. Results are summarised in Table 4.34.

**Table 4.34: The use of eclectic approaches to IT and business alignment to align IT and business strategies.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	35	27.3	36.1	36.1
	Disagree	5	3.9	5.2	41.2
	Neutral	37	28.9	38.1	79.4
	Agree	12	9.4	12.4	91.8
	Strongly agree	8	6.3	8.2	100.0
	Total	97	75.8	100.0	
Missing	System	31	24.2		
Total		128	100.0		

Of the respondents, 20.6 % agreed that they use eclectic approaches to align IT and business strategies; 41.2 % disagree; while 38.1 % were unsure or had no opinion. The results show us that there is a significant disagreement that organisations use the eclectic approaches to IT and business Model Alignment to manage alignment ( $Z = -3.831$ ,  $p=.000$ ) (see **table C.7 & 8: addendum C**). This indicates that respondents believe organisations to not use the eclectic approaches to IT and business model to manager alignment.

#### Q.40 The use of the Extended Strategic Alignment Model

This question was investigating the use of the Extended Strategic Alignment Model to align IT and business strategies. Results are summarised in Table 4.35.

**Table 4.35: The use of the Extended Strategic Alignment Model to align IT and business strategies**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	35	27.3	35.7	35.7
	<b>Disagree</b>	8	6.3	8.2	43.9
	<b>Neutral</b>	35	27.3	35.7	79.6
	<b>Agree</b>	16	12.5	16.3	95.9
	<b>Strongly agree</b>	4	3.1	4.1	100.0
	<b>Total</b>	98	76.6	100.0	
Missing	<b>System</b>	30	23.4		
Total		128	100.0		

Of the respondents, 20.4 % agreed that they use the model to align IT and business strategies; 43.9 % disagreed; while 35.7 % were unsure or had no opinion. The results show us that there is a significant disagreement that organisations use the extended strategic Alignment Model to manage alignment ( $Z = -4.490$ ,  $p=.000$ ) (see **table C.7 & 8: addendum C**). This indicates that respondents believe organisations do not use the extended strategic Alignment model to manage alignment.

#### Q.41 The use of the COBIT Framework

This question was investigating the use of the COBIT framework to align IT and business strategies. Results are summarised in Table 4.36.

**Table 4.36: The use of the COBIT framework to align IT and business strategies**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	23	18.0	23.0	23.0
	<b>Disagree</b>	9	7.0	9.0	32.0
	<b>Neutral</b>	32	25.0	32.0	64.0
	<b>Agree</b>	24	18.8	24.0	88.0
	<b>Strongly agree</b>	12	9.4	12.0	100.0
	<b>Total</b>	100	78.1	100.0	
Missing	<b>System</b>	28	21.9		
Total		128	100.0		

Of the respondents, 36 % agreed that they use the framework to align IT and business strategies; 32 % disagree; while 32 % were unsure or had no opinion. The results show us that there is disagreement that organisations use the COBIT Framework to manage alignment ( $Z = -965$ ,  $p = .335$ ) (see **table C.7 & 8: addendum C**). This indicates that respondents were divided but there was disagreement.

#### Q.42 The use of the IT steering committees

This question was investigating the use of IT steering committees to align IT and business strategies. Results are summarised in Table 4.37.

**Table 4.37: The use of IT steering committees in organisations to align IT and business strategies**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	27	21.1	27.6	27.6
	<b>Disagree</b>	10	7.8	10.2	37.8
	<b>Neutral</b>	33	25.8	33.7	71.4
	<b>Agree</b>	22	17.2	22.4	93.9
	<b>Strongly agree</b>	6	4.7	6.1	100.0
	<b>Total</b>	98	76.6	100.0	
Missing	<b>System</b>	30	23.4		
Total		128	100.0		

Of the respondents, 28.5 % agreed that they use the practice to align IT and business strategies; 37.8 % disagreed; while 33.7 % were unsure or had no opinion. The results show us that there is a significant disagreement that organisations use IT steering committee practise to manage alignment ( $Z = -2.802$ ,  $p = .005$ ) (see **table C.9 & 10: addendum C**). This indicates that respondents believe organisations do not use IT steering committee practise.

#### Q.43 The use of the IT portfolio management

This question was investigating the use of IT portfolio management. Results are summarised in Table 4.38.

**Table 4.38: The use of IT portfolio management in organisations**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	25	19.5	25.0	25.0
	<b>Disagree</b>	12	9.4	12.0	37.0
	<b>Neutral</b>	34	26.6	34.0	71.0
	<b>Agree</b>	23	18.0	23.0	94.0
	<b>Strongly agree</b>	6	4.7	6.0	100.0
	<b>Total</b>	100	78.1	100.0	
Missing	<b>System</b>	28	21.9		
Total		128	100.0		

Of the respondents, 29 % agree that they make use of the practice; 37 % disagree; while 34 % were unsure or had no opinion. The results show us that there is a significant disagreement that organisations use IT portfolio management practise to manage alignment ( $Z = -2.542$ ,  $p = .011$ ) (see **table C.9 & 10: addendum C**). This shows that respondents believe organisations do not use IT portfolio management practise.

#### Q.44 The use of the IT governance

This question was investigating the use of IT governance. Results are summarised in Table 4.39.

**Table 4.39: The use of IT governance in organisations**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>Strongly disagree</b>	25	19.5	24.5	24.5
	<b>Disagree</b>	9	7.0	8.8	33.3
	<b>Neutral</b>	30	23.4	29.4	62.7
	<b>Agree</b>	27	21.1	26.5	89.2
	<b>Strongly agree</b>	11	8.6	10.8	100.0
	<b>Total</b>	102	79.7	100.0	
Missing	<b>System</b>	26	20.3		
Total		128	100.0		

Of the respondents, 37.3 % agreed that they make use of the practice; 33.3 % disagree; while 29.4 % were unsure or had no opinion. The result shows that there is a disagreement among respondents that organisations use IT governance practise to manage alignment ( $Z = -1.245$ ,  $p=.213$ ) (see **table C.9 & 10: addendum C**). The results tell us that respondents were divided about this question but there was disagreement among respondents that organisations use IT governance practise to manage alignment.

Concerning the use of alignment models (Q.1-Q.6) the results indicate that majority of respondents disagree with the use of any model. Likewise, with the use of Cobit framework (Q.7) majority of respondents disagreed. The overall test was performed, and revealed that, there is significant disagreement ( $M=2.5805$ ,  $SD = 1.18062$ ) that models/frameworks are used for aligning IT and business strategy within organisations ( $t(106) = -3.658$ ,  $p<.000$ ) (see **table C.14: addendum C**). This reveals that SMEs do not use alignment models/frameworks.

The results further indicate that there is no difference across size of business in the agreement that alignment models are used ( $\chi^2(2) = .252$ ,  $p=.882$ ) (see **table C.34: addendum C**). Therefore, no further analysis was performed.



Concerning the use of IT steering Committee (Q.8) and IT portfolio management (Q.9) majority of respondents disagreed. Lastly, concerning the use of IT governance practise, (Q.10) respondents disagreed but they were divided. The overall test was performed and revealed that, there is neither significant agreement nor significant disagreement ( $M=2.7788$ ,  $SD = 1.19565$ ) that ‘practices’ are used for aligning IT and business strategy with the organisation ( $t(103) = -1.886$ ,  $p < .062$ ) (see **table C.15: addendum C**). This indicates that it is not immediately clear whether practise is used.

The results further indicate that there is no difference across size of business in the agreement that alignment models are used (see table C.34: **addendum C**). Therefore, no further analysis was performed.

#### **4.9 Conclusion**

The purpose of this chapter was to present data analysis. The chapter presented data analysis linked to the different sections of the questionnaire. The statistical analysis was presented in two forms: Descriptive statistics and Inferential Statistics. Descriptive statistics was presented using the mean to summarise data. The Inferential Statistics was performed using sample test, Wilcoxon signed Ranks test, the Kruskal Wallis and Mann-Whitney test were used.

An overall agreement on communication, use of alignment metric and IT business planning governance was found. On the other hand, an overall disagreement on the use of alignment practise was found. The comparison analysis across organisational size (1-20 vs 21-50, 1 – 20 vs 51-200 and 21-50 vs 51-200) on three constructs revealed that business with 51 – 200 employees, show significantly more agreement than those from a business with 21-50.

The next chapter interprets and discusses the results. Limitations and recommendations are also provided.

## Chapter 5

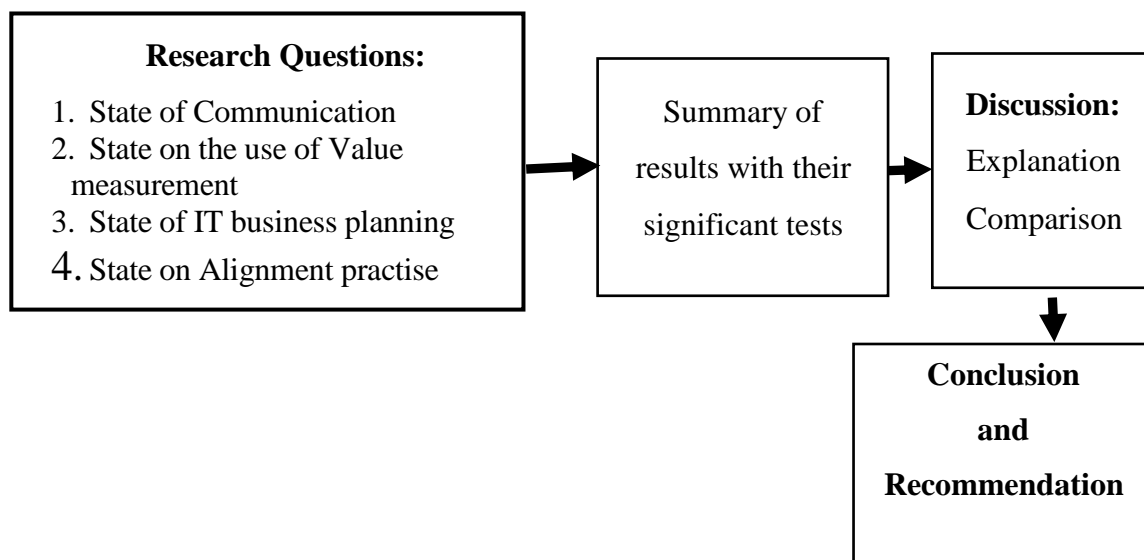
### Findings, Discussion and Recommendation

#### 5.1 Introduction

This section discusses the results from Chapter 4 in response to four questions: What is the current state of communication; value measurements; IT business planning and alignment practices in SMEs. A theoretical framework, adapted from Luftman's (2000) Strategic Alignment Maturity Model guides the discussion of results.

Chapter 2 consists of the literature review. The theoretical framework, adapted from the Strategic Alignment Maturity Model was explored in Chapter 3. This framework, together with research questions, was used to guide the study. Chapter 3 outlined the research method which was used to collect the data and to guide the review of the literature. In Chapter 4, data collected was analysed. Various tests were performed and significant results were reported. In this chapter, to obtain answers to research questions, the results are interpreted in accordance with the theory supporting the model in chapter 3. Results are placed within the existing body of knowledge to provide a better understanding. Finally, the entire chapter is summarised, followed by the limitation and recommendation.

This chapter is summarised in Figure 5.1.



**Figure 5.1 summary of the chapter**

**Table 5.1: Research Questions and summary of results**

<b>OVERALL FINDINGS ON RESEARCH QUESTIONS</b>	
<b>Research question 1:</b>	<b>Results: Description</b>
State of commination in SMEs	There is a significant agreement that there is communication between IT and business strategists
<b>Research question 2:</b>	<b>Results: Description</b>
State of Value metrics in SMEs	There is a significant agreement with the use of value metrics
<b>Research question 3:</b>	<b>Results: Description</b>
State of IT Business planning	There is a significant agreement that there is IT Business planning
<b>Research question 4:</b>	<b>Results: Description</b>
What PRACTICES if any are used by SMEs for alignment:	The results present significant disagreement on both alignment models and alignment practice
<b>Models</b>	significant disagreement
“The Strategic Grid”	
“Strategic Alignment Model”	
“Strategic Alignment Maturity Model”	
“Achieving and sustaining IT-business alignment”	
“Eclectic approaches to IT and business alignment”	
Extended strategic alignment model	
COBIT Framework	
<b>Practices</b>	either sig agreement nor sig disagreement is found
IT steering committee	
IT portfolio management	
IT governance	

## 5.2 Discussion

The main results of this study are discussed, summarised, then interpreted. The findings are placed in the existing body of knowledge and where there is existing knowledge, comparison is made. **5.2.1 Research question 1:**

### **What is the current state of communication between IT and business strategies in SMEs?**

Communication between IT and business strategies was analysed through the criteria (See Table 5.2):

Table 5.2. Communication criteria

Criteria	Question No	Main Construct
Understanding of business by IT	Q.8 and 9	Communication
Understanding of IT by business	Q.10 and 11	
Inter/ intra organisational learning	Q.12 and 13	
Protocol rigidity & Knowledge sharing Liaisons (s) effectiveness	Q.14 and 15	

**Understanding of business by IT-** The results indicate that the understanding of business by IT is perceived differently. Though there was an agreement among SMEs, there was still some employees who did not support the idea that IT understand the business. Therefore, the results do not give clear indication whether IT understand the fundamental needs of the organisations that the customer and competition faced. This means it is not clear how the IT department is positioned, whether as a partner or a simple supporting unit. This shows that the existence of IT in the organisation is not clear.

**Understanding of IT by business-** The results indicate that SMEs agree that business managers understand IT. Business managers are at ease with the IT application and systems that are used by the organisations. The results give clear indication that the business unit is positioned as a partner of the IT department. The business is no longer sitting at the receiving end of services recommended by IT, but also plays an active role in IT services provided to them. This is an advantage for the business.

**Inter/Intra-organisational learning-** the results indicate that SMEs are using E-mails to ensure continuous education within the organisation. However, the use of noticeboard is rejected. These results are indeed in line with what one would expect in the 21 century where technology is plays a central role in almost all activities. Quoting *Bill gate*: “Today it is difficult to talk about business without talking about IT”.

Lastly, **Protocol rigidity and Knowledge sharing/ Liaisons between IT and business-** This explains the closeness of IT and business managers. The results indicate that SMEs have put in place formal processes that support sharing of ideas among each other. In simple terms, it is a culture in which, when an organisation is faced with a matter, IT and business hold meetings to share ideas on how best that matter can be resolved using IT.

Similarly, it is a culture whereby both IT and business managers meet to share an understanding when there are new developments.

Finally, to determine overall effectiveness of exchange of ideas between IT and business strategists, the theory is recalled:

**Level 1:** many attributes are found to be poor. **Level 2:** many attributes are found to be good. In line with the theory, one-sample t-test was applied to determine the overall results. The overall measure shows that there is significant agreement ( $M=3.25$ ,  $SD = .882$ ) that there is effective exchange of ideas between IT and business strategists in SMEs ( $t(125) = 3.131$ ,  $p=.002$ ) i.e. majority of respondents speak in favour. Therefore, there is effective exchange of ideas between IT and business strategists. Communication is considered to be at the forefront of enabler of alignment of IT and business strategies and yet difficult to achieve particularly by SMEs. According to Rockart, Earl and Ross (1996), effective exchange of ideas will enable IT and business capabilities to be integrated effectively.

These findings support Mohsam and Van Brakel (2011) general view on communication in SMEs; while contradicting Nyamwanza's (2014) view of communication in SMEs in Africa. Similar outcomes have been identified in other previous studies in large organisations. The study by Ilmudeen (2011) in Sri Lanka, on the companies: Hirdaramani Group and Daya Group; Sledgianowski and Luftman (2005a) in the USA on chemical companies; and Naidoo (2012) at VW South Africa all presented similar findings to the current study, indicating good communication between IT and business. The IT senior and middle management are aware of the issues facing business; business has a growing appreciation of IT in the organisation and the organisation has established communication processes. Some studies have found communication otherwise. Ilmudeen (2011) in Sri Lanka, studying the company EAM Maliban Textiles (Pvt) Ltd, and Bowers (2006) researching companies in South Africa (Durban), found limited communication between IT and business.

However, a difference in agreement between Medium size and Small size enterprises was noted. Medium size enterprises showed agreement that there is communication between IT and business strategists.

### **5.2.2 Research question 2:**

#### **What metrics are put in place to measure value contributed by IT in SMEs?**

Value metrics were analysed through the following criteria (see Table 5.3):

**Table 5.3 Metrics criteria**

Criteria	Question No	Main Construct
IT matric	Q.16 and 17	<b>Metrics</b>
Business Metrics	Q.18 and 19	
Benchmarking	Q.20	
Formal assessment review	Q.21	
Service level agreement	Q.22	

Analysing the metrics, results indicate that SMEs have put in place technical measures (the use of systems availability and systems response time) as a tool to demonstrate value of IT to both IT and business. The use of financial measures indicated a disagreement; respondents were divided. Usually it is hard to demonstrate the value of IT using financial measures and one would expect that financial measures would not be a popular tool. Similarly, the use of IT that demonstrates its value as a whole was rejected. Likewise benchmarking exercises (e.g. company visits) on IT services provided by IT were also rejected. Finally, it is a culture that when a new application/ system is purchased, meetings are held to assess its importance. A formal agreement that explains the level is used by SMEs.

The overall test indicates that there is significant agreement ( $M=3.2271$ ,  $SD = .81763$ ) on the use of metric by SMEs ( $Z= -3.353$ ,  $p= .001$ ). This shows that majority of respondents agree with the use of performance indicators. Therefore, there is effective use of metrics.

Some studies conducted in large companies presented similar results, while others disagree. Studies conducted by some companies demonstrated the use of these performance measures. Ilmudeen's (2011) study in Sri Lanka on three large companies, the Hirdaramani Group, EAM Maliban Textiles (Pvt) Ltd and the Daya Group, found that all three companies made good use of performance indicators. While Sledgianowski and Luftman (2005a) in USA chemical companies; Bowers (2006) on companies in the Durban area in South Africa and Naidoo (2011) at VW South Africa, showed opposing findings on the use of performance indicators.

However, a difference in agreement between Medium size and Small size enterprises was noted. Medium size enterprises showed more agreement with the use of Metrics.

### 5.2.3 Research question 3:

#### What is the current state of IT Business planning in SMEs?

IT business planning practis18e was analysed through the criteria (see Table 5.4)

**Table 5.4. IT business planning practise criteria**

Criteria	Question No	Main Construct
Business strategic planning with IT	Q.23 and 25	<b>IT business planning</b>
IT strategic planning with business	Q.26 and 28	
Reporting IT	Q.29-31	
IT investment management	Q.32 -34	

**Participation of IT in business strategic planning-** This factor explains how business planning is performed across the organisation. The results indicate that the participation of IT in business strategic development is perceived differently by SMEs. This results from the fact that though participation of IT in business planning was somehow identified, it was not enough to draw a conclusion (i.e. respondents were divided). There was no clear indication of the participation of IT in business planning (i.e. respondents were divided). This extends a negative trend to partners.

**The importance of IT involvement in business planning-** IT is considered a second important enabler of alignment after communication by Luftman *et al* (1999), since it was noted that there is a gap between business and IT people ranging from language to knowledge at large. Having IT representatives in business planning provides business managers with the platform to understand its role and transfer of IT knowledge to business executives (Wu, Straub & Liang, 2015). The results reveal that SMEs should encourage the involvement of IT in business.

**Participation of business in IT strategic planning-** Here the same approach as **Participation of IT in business strategic planning** applies as both factors discuss how business strategic planning is done across the organisation, and how IT strategic planning is performed the same. The results indicate that a formal IT strategic planning process is established when there are participants in the IT strategy development. Therefore, IT managers will develop the organisation IT strategy that speaks directly to the needs of the organisation (Wu, Straub & Liang, 2015). This results from a collaboration between IT and business.

**Reporting of IT-** The results indicate that IT plans are reported to both CFO and CEO. This is not surprising as it was stated by Banker, Hu, Pavlou and Luftman (2011) that it is not clear to whom the plans should be reported to. The CFO guards against excessive costs that can be caused by IT, while the CEO takes advantage of IT. In addition, it is generally advised that IT plans should be reported to the CEO to encourage a close relationship between IT and business as well as better IT returns. Since SMEs are traditionally faced with financial challenges that may lead to insolvency, it is crucial for both measures to be put in place (CFO to guard against excessive IT investments while CEO continues to take advantage). The results indicate that reporting of plans to the COO is not recognised. According to luftman (2003) and Wu, Straub and Liang (2015) most recognised lines of reporting are those to the CEO or COO. Since the study was conducted in SMEs, it appears may be the COO position is not recognised in these organisations.

Lastly, **IT investment decision-** The findings indicate that investment decisions are made on informed basis. First, Investments are budgeted for and made based on the needs or are driven by the anticipated value of IT. Generally, the IT department will have to motivate for the need of a particular project or technology to be budgeted for and prioritised. Therefore, this is a good approach towards supporting alignment. Investments are always made in line with the best interest of the organisations. In other situations, investments are determined by the influence of a specific stakeholder who has a specific interest.

Finally, to determine the overall use of metrics, a test was performed which shows that there is significant agreement ( $M = 3.2413$ ,  $SD = .85741$ ), that there is IT business planning in SMEs ( $Z = -3.240$ ,  $p = .001$ ). This indicates that majority of respondents agree with the use of the practise (IT Business planning). This shows that SMEs have put in place a good regulatory system that encourages good management, responsibility and supervision needed to connect business in the midst of its difficulties and IT capability in order to achieve the goals of the organisations.

However, a difference in agreement between Medium size and Small size enterprises was evident. Medium size enterprises showed more agreement with the practise of IT governance.



#### 5.2.4 Research question 4

**What practices (if any) are used by SMEs to manage alignment of IT and business strategies?**

Alignment practises criteria were analysed through the criteria below (see Table 5.5)

**Table 5.5 Alignment practises criteria**

Criteria	Question No	Main Construct
alignment models/ framework	Q.35 - 41	Alignment Practices
alignment practises	Q.42-44	

#### **Results on Models/ frameworks –**

To understand the use of **alignment models**, an overall test was performed and revealed that there is significant disagreement ( $M=2.5805$ ,  $SD = 1.18062$ ) that models/frameworks are used for aligning IT and business strategy within organisations ( $t(106) = -3.658$ ,  $p < .000$ ). This shows that models/ frameworks are not used. Such results do not come as a surprise, as it has been emphasised that many models (Alyahya & Suhaimi, 2013), frameworks and theories are designed to be used in large organisations (COBIT was a framework designed for large organisations) (Zhou & Zhang, 2014; Bergeron *et al.*, 2015). These models and frameworks cannot be applied in SMEs because of the nature of their differences (Bili & Raymond, 1993; Levy *et al.*, 2001; Lin *et al.*,). The use in SMEs will lead to the ineffectiveness of the alignment models/ frameworks. SMEs need to refine these models to improve their suitability; however, previous COBIT was refined to suite SMEs but yielded poor results (ITGI, 2003).

#### **Results alignment practises –**

Regarding the use of IT steering committee and IT portfolio management, findings indicate majority of respondents disagreed. Lastly, concerning the use of IT governance practise, respondents disagreed and were divided. The general view of IT governance in SMEs is that it has previously been referred to as a practise for large organisations, and it requires modification to be applied in SMEs (Devos, Landeghem, & Deschoolmeester, 2012). The overall test was performed and revealed that there is either significant agreement or significant disagreement ( $M=2.7788$ ,  $SD = 1.19565$ ); and that ‘practices’ are used for aligning IT and business strategy with the organisation ( $t(103) = -1.886$ ,  $p < .062$ ).

This shows that it is not clear whether alignment practises are used.

### **5.3 Summary**

The purpose of this study was to investigate SMEs alignment maturity of IT and business strategies. The study adapted the model from the strategic alignment maturity model developed by Luftman (2000). Focusing on the social dimension of strategic alignment maturity model, three criteria from the framework were found suitable for the study (communication, metric and IT business planning). However, the use of alignment practices was found to be suitable for the study and was incorporated in the adapted model.

The study consisted of only one phase where the researcher investigated the problem through use of questionnaires. By carefully examining factors (Communication, value metric, IT business planning and alignment practice) affecting alignment of IT and business strategies, the degree (maturity) to which IT and business support each other was determined.

The study indicates that there is Effective exchange of information between IT and business strategies, use of metric that demonstrates value contributed by IT and IT business planning practise to manage and govern complex IT issues. This implies that a sustained governance process that integrates IT and Business strategies is in place. Therefore, organisations leverage IT assets on an enterprise-wide basis to extend the reach (the IT extra structure) of the organisation into supply chains of customers and suppliers. However, there is room for improvement since it appears that alignment models/ frameworks are not used.

### **5.4 Limitation**

The concept of strategic alignment used only three constructs from the strategic alignment model, an untested model, and SMEs registered with Border-Kei Chamber of Commerce to represent the entire Eastern Cape. The study is grounded on poor literature around the concept of strategic alignment in SMEs particularly in South Africa. In addition, data was collected and analysed from 128 SMEs; however, there were gaps in the data, which means there was no full representation of the 128 SMEs.

### **5.5 Recommendation**

#### **To SMEs:**

In order to develop further communication between IT and business, it is recommended that SMEs IT personnel should be encouraged to learn more about the business part of

the organisations. Business representatives should create platforms where they educate the IT about their customers and competition. Secondly, regarding the use of value metric it is evident that much work still needs to be done. The use of noticeboards was rejected outright while e-mails were accepted; it may be wise for SMEs to consider using new and modern ways of communication e.g. Whatsapp platforms, Facebook etc. furthermore, it is recommended that SMEs should encourage the use of financial measures and possibly find much simpler methods that can be understood in the organisation. In addition, Participation of IT in business strategic planning should be encouraged more (i.e. The organisation should have IT representatives who would be part of the team responsible for the organisation's planning); it would be wise to ensure IT reports reach the COO's table. Lastly, since the use of alignment was rejected outright and yet it contributes enormously, it is recommended that SMEs look into alignment model/s that can be used to support how IT planning/ investment, managing and governance of IT is done; Cobit could be very useful as well as other industry well accepted models and frameworks.

**For future research:**

For future research, more studies that investigate the concept (Alignment of IT and business strategies) are needed especially in the Eastern Cape. it is recommended that the research be replicated to validate the study. Particularly that the study is grounded on a model that is not tested; data does not fully represent SMEs analysed, therefore used companies registered with both-kei chamber of commerce should represent the entire Eastern Cape. Lastly, the same study should be conducted in other provinces, particularly more developed provinces such as Gauteng. It is recommended that the testing, and possible expansion of the model used in this study should include all six SAMM constructs..

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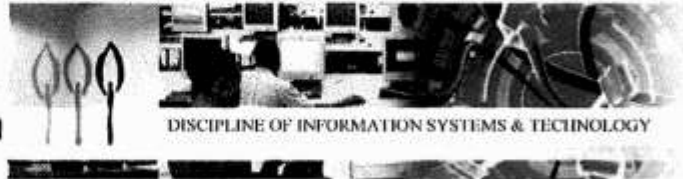
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UNIVERSITY OF  
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YAKWAZULU-NATALI



March 31, 2015

To Whom It May Concern:

**PERMISSION TO CONDUCT RESEARCH TOWARDS THE MASTERS QUALIFICATION**

It is a requirement of our Masters qualification that the student completes a thesis based on research in a specific field of study. In this way students are given the opportunity to creatively link and discuss the theoretical aspects of the programme to the practical issues facing organisations in real life settings. Typically a thesis necessitates data gathering and the student is collecting data by means of a questionnaire.

Student name: Phomolo Motsilili (Student No. 208528117) research project is entitled:

**IT-Business Strategic Alignment Maturity In Small And Medium Enterprises**

Your assistance in permitting access to your organization for purposes of this research is most appreciated. Please be assured that all information gained from the research will be treated with the utmost confidentiality. Furthermore, should you wish any result/s or findings from the research "to be restricted" for an agreed period of time, this can be arranged. The confidentiality of information and anonymity of personnel will be strictly adhered to by the student.

I am available at any stage to answer any queries and/or to discuss any aspect of this research project.

If permission is granted, please complete and sign the Gatekeeper's Consent.

Thank you for your assistance in this regard.

Yours sincerely

  
K.Naidoo (Supervisor)

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Gatekeeper's Consent

I Les Holbrook in my capacity as Director hereby give permission to  
Phomolo Motsilili (Student No. 208528117) to conduct research in my organization.

The student MAY/MAY NOT (delete whichever is not applicable) use the name of the organisation in  
the dissertation.

Signature of Manager/Owner/Gatekeeper: 

Company Stamp:

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Date: 15 May 2015



**UNIVERSITY OF KWAZULU-NATAL**

**School of Management, Information Technology & Governance, Discipline of  
Information Systems and Technology**

**M Com Research Project**

**Researcher:** Mr Phomolo Motsilili (0738554035)

**Supervisor:** Mr Karunagaran Naidoo (031 2603526)

I am a Masters student in Information Systems & Technology at the University of KwaZuluNatal. You are requested to participate in a research project that is intended to assess alignment maturity of IT and Business strategies in Small and Medium-size enterprises.

Your participation in this project is voluntary. You may withdraw from the project at any time. There will be no financial gain from participating in this project. Your personnel identity and responses will be maintained confidentially.

If there are any questions or concerns about participating in this study, please contact the researcher or my supervisor via the numbers provided above.

Approximately (15) **minutes** is required to complete the questionnaire. I hope you will take the time to complete the questionnaire.

Yours faithfully

Phomolo Motsilili

Researcher's Signature:

A handwritten signature in black ink, appearing to be 'Phomolo Motsilili', written over a horizontal line.

Date: 06/12/2017

*This page should be retained by the participant*





**UNIVERSITY OF KWAZULU-NATAL**

**School of Management Information Technology and Governance,  
Discipline Information Systems & Technology**

**M Com Research Project**

**Researcher:** Mr Phomolo Motsilili (0738554035)

**Supervisor:** Mr Karunagaran Naidoo (031260 3526)

**CONSENT**

I \_\_\_\_\_ (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I agree to participate in the research project. I also understand that I can withdraw from the project at any time.

\_\_\_\_\_

Signature of Participant

\_\_\_\_\_

Date

***This page should be signed and returned to the researcher***



## Alignment of IT and business strategies in Small and Medium-Size Enterprises in the Eastern Cape Province.

Researcher: Mr Phomolo Motsilili (0738554035 / phomolomotsilili@gmail.com)

Supervisor: Mr Karunagaran Naidoo (0312603526 / naidook82@ukzn.ac.za)

School of Management, Information Systems & Technology and Governance

Discipline Information Systems & Technology

University of KwaZulu-Natal, Pietermaritzburg, South Africa

- Please complete this voluntary questionnaire on IT- Business Strategic Alignment Maturity. This research seeks to understand the extent to which IT and Business Strategies in Small and Medium size enterprises support each other.
- Please be forthright in your answers.
- Complete the questionnaire by pen and please do not revise your initial answers.
- Please indicate your response to the Question by completing the appropriate boxes.
- Please sign the letter of informed consent, giving the researcher permission to use the responses for this research project.

### Section A: Biographical Information about yourself

*Please select only ONE option per question.*

#### 1. Gender

- ☐ Female  
☐ Male

#### 2. Age

- ☐ 20 years or younger  
☐ 21 – 29 years  
☐ 30 – 39 years  
40 – ☐ 49 years  
50 – ☐ years or older

#### 3. Race

Black	Coloured	Indian	White	Other: Specify

4. What position do you occupy within the organisation? (Select ONE option only)

5. For how long has your organisation been established?

- ☐ Less than 1 year
- ☐ 1 to less than 4 years
- ☐ 4 to less than 7 years
- ☐ 7 years or more

CIO (IT manager)	Senior IT Manager	IT Manager	Senior Manager	Business Manager	Owner
Other: Specify					

6. Which business sector best describes your organisation? (Select ONE option only)

Construction	Retail	Finance	Manufacturing	Transport
Wholesale	Accommodation	Other: Specify below		

7. What is the approximate number of employees in your business?

- ☐ 1 to 20
- ☐ 21 to 50
- ☐ 51 to 200
- ☐ 201 and more

## Section B: What is the Current state of COMMUNICATION between IT and Business strategies in SMEs?

“Communication refers to the effective exchange of ideas, knowledge and information sharing among the IT and Business managers, enabling them to have a clear understanding of the organisations strategies; Business and IT environments, the priorities and what must be done to achieve them”.

*Indicate your agreement with the following statements*

	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
8.	The IT personnel understand the needs of the organisations customers					
9.	The competition faced by the organisation from competitors is understood by the IT person/s					
10.	Applications/ systems that are used by the organisation are understood by the organisation's Managers?					
11.	Managers understand potential applications/ systems that are used to improve the organisation's performance					
12.	Managers usually sends E-mails to communicate newly implemented applications/ systems to employees					
13.	Managers usually place notices on the noticeboard to communicate newly implemented applications/ systems to employees					
14.	When there are Business issues to be resolved both Business and IT managers meet to determine an IT solution related to the business					
15.	When there are changes in the organisation's Objectives/ goals/ opportunities, meetings are held together with IT managers					

**Section C: What are VALUE MEASUREMENTS put in place to measure value contributed by IT in SMEs?**

“Value measurement refers to the assessment of key performance indicators to demonstrate the contributions of IT to the Business in terms that both the Business and IT understand and accept”.

*Indicate your agreement with the following statements*

	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
16.	The organisation uses the system's response time to measure value of IT					
17.	The organisation uses system availability to measure the value of IT					
18.	The organisation uses financial measures (return on investment (ROI), payback period, discount rate of return, discounted cash flow etc.) to measure the value of IT					
19.	The organisation has put processes in place to measure the value contributed by the organisation's IT as a whole (e.g. organisation's interconnected applications, systems, databases and networks). These measures sometimes extend to organisation's partners (Vendor or customers)					
20.	Managers carry out benchmarking exercises (e.g. company visits or informal interviews etc.) on IT services (e.g. Software installations, system support, help desk etc.) provided to the organisation					
21.	When new applications/systems are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevance of the applications/systems					
22.	The organisation uses service level agreements (SLAs) for the services rendered by IT					

#### **Section D: What is the level of IT-business planning in SMEs?**

“IT business planning refers to the extent to which the organisation ensures that appropriate Business and IT participants formally discuss and review organisation strategic goals, priorities and allocation of financial resources”.

*Indicate your agreement with the following statements*

	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
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23.	The organisation does formal strategic business planning at the functional unit levels with some IT participation					
24.	The organisation does formal strategic business planning across all the organisation's departments with IT participation					
25.	The organisation does formal strategic business planning across all the organisation's departments with their partners					
26.	The organisation does IT strategic planning at the functional level with Business participation					
27.	The organisation does IT strategic Planning across all departments in the organisation					
28.	The organisation does IT strategic planning across all departments in the organisation with their partners					
29.	IT plans are reported to financial managers e.g. CFO or accountant					
30.	IT plans are reported to operational managers e.g. COO or supply chain managers					
31.	IT plans are reported to senior manager business manager e.g. CEO, director or owner					
32.	Applications/ systems are budgeted for					
33.	Decisions on which applications/ systems to buy first are driven by the organisation's needs					
34.	Decisions on which applications/ systems to buy first are determined by the estimated value					

**Section E: What PRACTICES if any are used by SMEs to manage Alignment of IT and Business strategies?**

“Practices refers to validated processes that stand for effective way to follow so to achieve specific goal. These practices can therefore be presented as guidelines (theories, models, frameworks)”

*Indicate your agreement that the following model/s are used to align IT and Business Strategy with the organisation*

	<b>Model</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
35.	The Strategic Grid					

36.	Strategic alignment model					
37.	Strategic alignment maturity model					
38.	Achieving and sustaining IT-Business alignment.					
39.	There eclectic Approaches to IT and Business					
40.	The eclectic Approaches to IT and Business Alignment					
41.	Extended strategic Alignment model					
42.	COBIT Framework					

*Indicate your agreement that the following practices are used by the organisation to manage alignment within the organisation*

	<b>Practice</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
43.	IT steering committee					
44.	IT portfolio management					
45.	IT governance					

Thank you very much.

Your time and effort to complete the questionnaire is highly appreciated.

#### **ADDENDUM C: DATA ANALYSIS:**

<b>TABLE C.1</b>		<b>One-Sample Statistics</b>			
		N	Mean	Std. Deviation	Std. Error Mean
8	The IT personnel understand the needs of the organisations customers	126	3.24	1.311	.117
9	The competition faced by the organisation from competitors is understood by the IT person/s	125	3.05	1.156	.103
10	Applications/ systems that are used by the organisation are understood by the organisation's Managers?	126	3.48	1.157	.103

11 Managers understand potential applications/ systems that are used to improve the organisation's performance	126	3.25	1.179	.105
12 Managers usually sends Emails to communicate newly implemented applications/ systems to employees	126	3.37	1.177	.105
13 Managers usually place notices on the noticeboard to communicate newly implemented applications/ systems to employees	126	2.79	1.170	.104
14 When there are Business issues to be resolved both Business and IT managers meet to determine an IT solution related to the business	126	3.38	1.072	.096
15 When there are changes in the organisation's Objectives/ goals/ opportunities, meetings are held together with IT managers	126	3.41	1.140	.102

**TABLE C.2**

**Test Statistics<sup>c</sup>**



	three - 8 The IT personnel understand the needs of the organisations customers	three - 9 The competition faced by the organisation from competitors is understood by the IT person/s	three - 10 Applications / systems that are used by the organisation are understood by the organisation's Managers?	three - 11 Managers understand potential applications/systems that are used to improve the organisation's performance	three - 12 Managers usually sends Emails to communicate newly implemented applications / systems to employees	three - 13 Managers usually place notices on the noticeboard to communicate newly implemented applications / systems to employees	three - 14 When there are Business issues to be resolved both Business and IT managers meet to determine an IT solution related to the business	three - 15 When there are changes in the organisation's Objectives/goals/opportunities, meetings are held together with IT managers
Z	-1.563 <sup>a</sup>	-.257 <sup>a</sup>	-3.878 <sup>a</sup>	-2.109 <sup>a</sup>	-3.161 <sup>a</sup>	-2.211 <sup>b</sup>	-3.457 <sup>a</sup>	-3.624 <sup>a</sup>
Asym p. Sig. (2tailed)	.118	.797	.000	.035	.002	.027	.001	.000
a. Based on positive ranks.								
b. Based on negative ranks.								
c. Wilcoxon Signed Ranks Test								

TABLE C.3		One-Sample Statistics			
		N	Mean	Std. Deviation	Std. Error Mean
16 The organisation uses the system's response time to measure value of IT		126	3.48	1.231	.110
17 The organisation uses system availability to measure the value of IT		126	3.87	1.023	.091

18 The organisation uses financial measures (return on investment (ROI), payback period, discount rate of return, discounted cash flow etc.) to measure the value of IT	124	2.88	1.123	.101
19 The organisation has put processes in place to measure the value contributed by the organisation's IT as a whole (e.g. organisation's interconnected applications, systems, databases and networks). These measures sometimes extend to organisation's partn	124	2.83	1.124	.101
20 Managers carry out benchmarking exercises (e.g. company visits or informal interviews etc.) on IT services (e.g. Software installations, system support, help desk etc.) provided to the organisation	124	2.99	1.101	.099
	124	3.34	1.249	.112
21 When new applications/systems are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevance of the applications/systems				
22 The organisation uses service level agreements (SLAs) for the services rendered by IT	126	3.25	1.350	.120

TABLE C.4				Test Statistics <sup>c</sup>			
	three - 16 The organisatio n uses the system's response time to measure value of IT	three - 17 The organisatio n uses system availability to measure the value of IT	three - 18 The organisatio n uses financial measures (return on investment (ROI), payback period, discount rate of return, discounted cash flow etc.) to measure the value of IT	three - 19 The organisation has put processes in place to measure the value contributed by the organisation's IT as a whole (e.g. organisation's interconnecte d applications, systems, databases and networks). These measures sometimes extend to organisation's partn	three - 20 Managers carry out benchmarkin g exercises (e.g. company visits or informal interviews etc.) on IT services (e.g. Software installations, system support, help desk etc.) provided to the organisation	three - 21 When new applications/system s are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevanc e of the applications/system s	three - 22 The organisatio n uses service level agreement s (SLAs) for the services rendered by IT
Z	-3.690 <sup>a</sup>	-6.980 <sup>a</sup>	-1.257 <sup>b</sup>	-1.857 <sup>b</sup>	-.283 <sup>b</sup>	-2.694 <sup>a</sup>	-2.114 <sup>a</sup>
Asymp . Sig. (2tailed)	.000	.000	.209	.063	.777	.007	.034
a. Based on positive ranks.							
b. Based on negative ranks.							
c. Wilcoxon Signed Ranks Test							

<b>TABLE C.5</b>		<b>One-Sample Statistics</b>		
	N	Mean	Std. Deviation	Std. Error Mean
23 The organisation does formal strategic business planning at the functional unit levels with some IT participation	124	3.17	1.110	.100
24 The organisation does formal strategic business planning across all the organisation's departments with IT participation	124	3.21	1.164	.104
25 The organisation does formal strategic business planning across all the organisation's departments with their partners	124	2.94	1.102	.099
26 The organisation does IT strategic planning at the functional level with Business participation	121	2.98	1.197	.109
27 The organisation does IT strategic Planning across all departments in the organisation	124	3.08	1.193	.107
28 The organisation does IT strategic planning across all departments in the organisation with their partners	124	2.77	1.162	.104
29 IT plans are reported to financial managers e.g. CFO or accountant	125	3.44	1.139	.102
30 IT plans are reported to operational managers e.g. COO or supply chain managers	123	2.94	1.176	.106
31 IT plans are reported to senior manager business manager e.g. CEO, director or owner	124	3.72	1.166	.105

32 Applications/ systems are budgeted for	123	3.70	1.032	.093
33 Decisions on which applications/ systems to buy first are driven by the organisation's needs	122	3.70	1.018	.092
	123	3.26	1.100	.099
34 Decisions on which applications/ systems to buy first are determined by the estimated value				

TABLE C.6		Test Statistics <sup>c</sup>										
	three - 23 The organis ation does formal strategi c busines s plannin g at the functio nal unit levels with some IT participa tion	three - 24 The organisa tion does formal strategic busines s planning across all the organisa tion's departm ents with IT participa tion	three - 25 The organisa tion does formal strategic busines s planning across all the organisa tion's departm ents with their partners	three - 26 The organis ation does IT strategi c plannin g at the functio nal level with Busine ss participa tion	three - 27 The organis ation does IT strategi c Plannin g across all depart ments in the organis ation	three - 28 The organis ation does IT strategi c plannin g across all depart ments in the organis ation with their partner s	three - 29 IT plans are report ed to financi al manag ers e.g. CFO or accoun tant	three - 30 IT plans are report ed to operati onal manag ers e.g. COO or supply chain manag ers	three - 31 IT plans are report ed to senio r mana ger busin ess mana ger e.g. CEO, direct or or owne r	three - 32 Applicat ions/ system s are budget ed for	three - 33 Decision s on which applicati ons/ systems to buy first are driven by the organisa tion's needs	three - 34 Decision s on which applicati ons/ system s to buy first are determi ned by the estimat ed value
Z	-1.173 <sup>a</sup>	-1.608 <sup>a</sup>	-.989 <sup>b</sup>	-.432 <sup>b</sup>	-.442 <sup>a</sup>	-2.512 <sup>b</sup>	- 3.786 <sup>a</sup>	-.835 <sup>b</sup>	- 5.503 <sup>a</sup>	-5.781 <sup>a</sup>	-5.938 <sup>a</sup>	-2.278 <sup>a</sup>
Asy mp. Sig. (2taile d)	.241	.108	.323	.666	.658	.012	.000	.404	.000	.000	.000	.023
a. Based on positive ranks.												
b. Based on negative ranks.												
c. Wilcoxon Signed Ranks Test												

<b>TABLE C.7</b>		<b>One-Sample Statistics</b>			
		N	Mean	Std. Deviation	Std. Error Mean
35	The Strategic Grid	104	2.69	1.394	.137
36	Strategic alignment model	101	2.51	1.254	.125
37	Strategic alignment maturity model	97	2.51	1.292	.131
38	Achieving and sustaining IT-Business alignment.	100	2.47	1.291	.129
40	The eclectic Approaches to IT and Business Alignment	97	2.52	1.316	.134
41	Extended strategic Alignment model	98	2.45	1.245	.126
42	COBIT Framework	100	2.93	1.320	.132

<b>TABLE C.8</b>		<b>Test Statistics<sup>b</sup></b>						
		three - 35 The Strategic Grid	three - 36 Strategic alignment model	three - 37 Strategic alignment maturity model	three - 38 Achieving and sustaining IT-Business alignment.	three - 40 The eclectic Approaches to IT and Business Alignment	three - 41 Extended strategic Alignment model	three - 42 COBIT Framework
Z		-2.992 <sup>a</sup>	-4.165 <sup>a</sup>	-4.294 <sup>a</sup>	-4.308 <sup>a</sup>	-3.831 <sup>a</sup>	-4.490 <sup>a</sup>	-.965 <sup>a</sup>
Asymp. Sig. (2-tailed)		.003	.000	.000	.000	.000	.000	.335
a. Based on negative ranks.								
b. Wilcoxon Signed Ranks Test								

TABLE C.9		One-Sample Statistics			
	N	Mean	Std. Deviation	Std. Error Mean	
43 IT steering committee	98	2.69	1.263	.128	
44 IT portfolio management	100	2.73	1.238	.124	
45 IT governance	102	2.90	1.331	.132	

TABLE C.10		Test Statistics <sup>b</sup>		
	three - 43 IT steering committee	three - 44 IT portfolio management	three - 45 IT governance	
Z	-2.802 <sup>a</sup>	-2.542 <sup>a</sup>	-1.245	
Asymp. Sig. (2-tailed)	.005	.011	.213	
a. Based on negative ranks.				
b. Wilcoxon Signed Ranks Test				

Table C.11						
Reliability Statistics						
Cronbach's Alpha	N of Items					
.891	8					
One-Sample Statistics						
	N	Mean	Std. Deviation	Std. Error Mean		
Communication	126	3.2459	.88165	.07854		
One-Sample Test						
	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Communication	3.131	125	.002	.24589	.0904	.4013



Table C.12				
Reliability Statistics				
Cronbach's Alpha	N of Items			
.818	7			
One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Value_measure	126	3.2271	.81763	.07284
Test Statistics <sup>b</sup>				
	three - Value_measure			
Z		-3.353 <sup>a</sup>		
Asymp. Sig. (2-tailed)		.001		
a. Based on positive ranks.				
b. Wilcoxon Signed Ranks Test				

Table C.13				
Reliability Statistics				
Cronbach's Alpha	N of Items			
.934	12			
One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
IT Governance	125	3.2413	.85741	.07669
Test Statistics <sup>b</sup>				
	three - Planning			
Z	-3.240 <sup>a</sup>			
Asymp. Sig. (2-tailed)	.001			
a. Based on positive ranks.				
b. Wilcoxon Signed Ranks Test				

Table C.14	
Reliability Statistics	
Cronbach's Alpha	N of Items
.966	7

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
MODELS	106	2.5805	1.18062	.11467

One-Sample Test						
	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
MODELS	-3.658	105	.000	-.41945	-.6468	-.1921

Table C.15	
Reliability Statistics	
Cronbach's Alpha	N of Items
.937	3

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
PRACTICES	104	2.7788	1.19565	.11724

One-Sample Test						
	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
PRACTICES	-1.886	103	.062	-.22115	-.4537	.0114

<b>Table C.16</b>				
		N	Mean	Std. Deviation
8 The IT personnel understand the needs of the organisations customers	1 - 20	25	3.00	1.633
	21 - 50	52	2.98	1.229
	51 - 200	49	3.63	1.131
	Total	126	3.24	1.311
9 The competition faced by the organisation from competitors is understood by the IT person/s	1 - 20	25	2.72	1.339
	21 - 50	52	2.88	1.114
	51 - 200	48	3.40	1.026
	Total	125	3.05	1.156
10 Applications/ systems that are used by the organisation are understood by the organisation's Managers?	1 - 20	25	3.24	1.562
	21 - 50	52	3.21	1.073
	51 - 200	49	3.88	.881
	Total	126	3.48	1.157
11 Managers understand potential applications/ systems that are used to improve the organisation's performance	1 - 20	25	3.28	1.339
	21 - 50	52	3.00	1.048
	51 - 200	49	3.51	1.192
	Total	126	3.25	1.179
12 Managers usually sends Emails to communicate newly implemented applications/ systems to employees	1 - 20	25	3.12	1.236
	21 - 50	52	3.06	1.178
	51 - 200	49	3.82	1.014
	Total	126	3.37	1.177
13 Managers usually place notices on the noticeboard to communicate newly implemented applications/ systems to employees	1 - 20	25	2.52	1.327
	21 - 50	52	2.90	1.176
	51 - 200	49	2.80	1.080
	Total	126	2.79	1.170

14 When there are Business issues to be resolved both Business and IT managers meet to determine an IT solution related to the business	1 - 20	25	3.04	1.274
	21 - 50	52	3.13	1.103
	51 - 200	49	3.82	.755
	Total	126	3.38	1.072
15 When there are changes in the organisation's Objectives/ goals/ opportunities, meetings are held together with IT managers	1 - 20	25	3.24	1.363
	21 - 50	52	3.12	1.060
	51 - 200	49	3.82	.993
	Total	126	3.41	1.140

Table C.17		Test Statistics <sup>a,b</sup>						
	8 The IT personnel understand the needs of the organisations customers	9 The competition faced by the organisation from competitors is understood by the IT person/s	10 Applications / systems that are used by the organisation are understood by the organisation's Managers?	11 Managers understand potential applications/ systems that are used to improve the organisation's performance	12 Managers usually sends Emails to communicate the newly implemented applications / systems to employees	13 Managers usually place notices on the noticeboard to communicate the newly implemented applications / systems to employees	14 When there are Business issues to be resolved both Business and IT managers meet to determine an IT solution related to the business	15 When there are changes in the organisation's Objectives/ goals/ opportunities, meetings are held together with IT managers
ChiSquare	6.703	6.969	10.218	5.579	13.240	1.885	11.418	11.098
df	2	2	2	2	2	2	2	2
Asym p. Sig.	.035	.031	.006	.061	.001	.390	.003	.004

a. Kruskal Wallis Test
b. Grouping Variable: Employees

1-20 vs 21-50

Table C.18 Statistics <sup>a</sup>						Test
	8 The IT personnel understand the needs of the organisations customers	9 The competition faced by the organisation from competitors is understood by the IT person/s	10 Applications/ systems that are used by the organisation are understood by the organisation's Managers?	12 Managers usually sends E-mails to communicate newly implemented applications/ systems to employees	14 When there are Business issues to be resolved both Business and IT managers meet to determine an IT solution related to the business	15 When there are changes in the organisation's Objectives/ goals/ opportunities, meetings are held together with IT managers

Mann-Whitney U	620.500	602.500	587.000	631.000	640.000	586.000
Wilcoxon W	1998.500	927.500	1965.000	2009.000	965.000	1964.000
Z	-.331	-.532	-.728	-.215	-.115	-.724
Asymp. Sig. (2-tailed)	.741	.595	.467	.830	.908	.469
a. Grouping Variable: Employees						
No sig differences						

**Table C.19** 1 – 20 vs 51-200

Test Statistics <sup>a</sup>						
	8 The IT personnel understand the needs of the organisations customers	9 The competition faced by the organisation from competitors is understood by the IT person/s	10 Applications/ systems that are used by the organisation are understood by the organisation's Managers?	12 Managers usually sends Emails to communicate newly implemented applications/ systems to employees	14 When there are Business issues to be resolved both Business and IT managers meet to determine an IT solution related to the business	15 When there are changes in the organisation's Objectives/ goals/ opportunities, meetings are held together with IT managers
Mann-Whitney U	499.500	427.500	513.500	415.500	417.000	473.000
Wilcoxon W	824.500	752.500	838.500	740.500	742.000	798.000
Z	-1.335	-2.078	-1.249	-2.466	-2.455	-1.684
Asymp. Sig. (2-tailed)	.182	.038	.212	.014	.014	.092

a. Grouping Variable: Employees

21-50 vs 51-200

Table C.20	Test Statistics <sup>a</sup>
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		8 The IT personnel understand the needs of the organisations customers	9 The competition faced by the organisation from competitors is understood by the IT person/s	10 Applications/ systems that are used by the organisation are understood by the organisation's Managers?	12 Managers usually sends E-mails to communicate newly implemented applications/ systems to employees	14 When there are Business issues to be resolved both Business and IT managers meet to determine an IT solution related to the business	15 When there are changes in the organisation's Objectives/ goals/ opportunities, meetings are held together with IT managers
Mann-Whitney U		897.000	924.000	817.000	789.000	843.500	798.500
Wilcoxon W		2275.000	2302.000	2195.000	2167.000	2221.500	2176.500
Z		-2.668	-2.329	-3.409	-3.533	-3.168	-3.386
Asymp. Sig. (2-tailed)		.008	.020	.001	.000	.002	.001
a. Grouping Variable: Employees							

**Table C.21**

		N	Mean	Std. Deviation
16 The organisation uses the system's response time to measure value of IT	1 - 20	26	3.15	1.377
	21 - 50	51	3.47	1.302
	51 - 200	49	3.67	1.049
	Total	126	3.48	1.231
17 The organisation uses system availability to measure the value of IT	1 - 20	26	3.58	1.447
	21 - 50	51	3.78	.945
	51 - 200	49	4.10	.770
	Total	126	3.87	1.023
18 The organisation uses financial measures (return on investment (ROI), payback period, discount rate of return, discounted cash flow etc.) to measure the value of IT	1 - 20	26	2.77	1.451
	21 - 50	49	2.67	.987
	51 - 200	49	3.14	1.021
	Total	124	2.88	1.123
19 The organisation has put processes in place to measure the value contributed by the organisation's IT as a whole (e.g. organisation's interconnected applications, systems, databases and networks). These measures sometimes extend to organisation's partn	1 - 20	26	2.58	1.172
	21 - 50	49	2.55	1.081

	51 - 200	49	3.24	1.031
	Total	124	2.83	1.124
20 Managers carry out benchmarking exercises (e.g. company visits or informal interviews etc.) on IT services (e.g. Software installations, system support, help desk etc.) provided to the organisation	1 - 20	26	2.58	1.238
	21 - 50	49	2.84	1.143
	51 - 200	49	3.37	.859
	Total	124	2.99	1.101
21 When new applications/systems are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevance of the applications/systems	1 - 20	26	3.15	1.287
	21 - 50	49	3.02	1.266
	51 - 200	49	3.76	1.109
	Total	124	3.34	1.249
22 The organisation uses service level agreements (SLAs) for the services rendered by IT	1 - 20	26	3.38	1.416
	21 - 50	51	2.96	1.341
	51 - 200	49	3.49	1.293
	Total	126	3.25	1.350

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**Table C.22**



	16 The organisation uses the system's response time to measure value of IT	17 The organisation uses system availability to measure the value of IT	18 The organisation uses financial measures (return on investment (ROI), payback period, discount rate of return, discounted cash flow etc.) to measure the value of IT	19 The organisation has put processes in place to measure the value contributed by the organisation's IT as a whole (e.g. organisation's interconnected applications, systems, databases and networks). These measures sometimes extend to organisation's partn	20 Managers carry out benchmarking exercises (e.g. company visits or informal interviews etc.) on IT services (e.g. Software installations, system support, help desk etc.) provided to the organisation	21 When new applications/systems are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevance of the applications/systems	22 The organisation uses service level agreements (SLAs) for the services rendered by IT
Chi-Square	2.119	2.836	4.008	10.422	8.860	9.308	4.285
df	2	2	2	2	2	2	2
Asymp. Sig.	.347	.242	.135	.005	.012	.010	.117
a. Kruskal Wallis Test b. Grouping Variable: Employees							

1 – 20 vs 51-200

**Table C.23**

**Test Statistics<sup>a</sup>**

	19 The organisation has put processes in place to measure the value contributed by the organisation's IT as a whole (e.g. organisation's interconnected applications, systems, databases and networks). These measures sometimes extend to organisation's partn	20 Managers carry out benchmarking exercises (e.g. company visits or informal interviews etc.) on IT services (e.g. Software installations, system support, help desk etc.) provided to the organisation	21 When new applications/systems are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevance of the applications/systems
Mann-Whitney U	440.000	400.500	464.000
Wilcoxon W	791.000	751.500	815.000
Z	-2.281	-2.749	-2.016
Asymp. Sig. (2-tailed)	.023	.006	.044
a. Grouping Variable: Employees			

Table C.24		Test Statistics <sup>a</sup>		
	19 The organisation has put processes in place to measure the value contributed by the organisation's IT as a whole (e.g. organisation's interconnected applications, systems, databases and networks). These measures sometimes extend to organisation's partn	20 Managers carry out benchmarking exercises (e.g. company visits or informal interviews etc.) on IT services (e.g. Software installations, system support, help desk etc.) provided to the organisation	21 When new applications/systems are purchased, IT managers hold meeting/s with managers to discuss and assess the importance/relevance of the applications/systems	
Mann-Whitney U	787.500	905.500	809.000	
Wilcoxon W	2012.500	2130.500	2034.000	
Z	-3.040	-2.199	-2.927	
Asymp. Sig. (2-tailed)	.002	.028	.003	
a. Grouping Variable: Employees				

**Table C.25**

		N	Mean	Std. Deviation
23 The organisation does formal strategic business planning at the functional unit levels with some IT participation	1 - 20	26	2.85	1.287
	21 - 50	49	2.86	1.137
	51 - 200	49	3.65	.779
	Total	124	3.17	1.110
24 The organisation does formal strategic business planning across all the organisation's departments with IT participation	1 - 20	26	2.96	1.371
	21 - 50	49	2.86	1.155
	51 - 200	49	3.69	.871
	Total	124	3.21	1.164
25 The organisation does formal strategic business planning across all the organisation's departments with their partners	1 - 20	26	2.88	1.451
	21 - 50	49	2.73	1.169
	51 - 200	49	3.16	.746
	Total	124	2.94	1.102
26 The organisation does IT strategic planning at the functional level with Business participation	1 - 20	26	2.77	1.275
	21 - 50	46	2.59	1.240
	51 - 200	49	3.47	.938
	Total	121	2.98	1.197
27 The organisation does IT strategic Planning across all departments in the organisation	1 - 20	26	3.00	1.296
	21 - 50	49	2.67	1.214
	51 - 200	49	3.53	.960
	Total	124	3.08	1.193
28 The organisation does IT strategic planning across all departments in the organisation with their partners	1 - 20	26	2.62	1.235
	21 - 50	49	2.37	1.202

	51 - 200	49	3.24	.902
	Total	124	2.77	1.162
29 IT plans are reported to financial managers e.g. CFO or accountant	1 - 20	26	3.08	1.197
	21 - 50	50	3.24	1.188
	51 - 200	49	3.84	.943
	Total	125	3.44	1.139
	1 - 20	26	2.73	1.313
30 IT plans are reported to operational managers e.g. COO or supply chain managers	21 - 50	48	2.69	1.257
	51 - 200	49	3.31	.918
	Total	123	2.94	1.176
31 IT plans are reported to senior manager business manager e.g. CEO, director or owner	1 - 20	26	3.50	1.449
	21 - 50	49	3.43	1.173
	51 - 200	49	4.12	.857
	Total	124	3.72	1.166
	1 - 20	25	3.36	1.287
32 Applications/ systems are budgeted for	21 - 50	49	3.51	1.063
	51 - 200	49	4.06	.719
	Total	123	3.70	1.032
	1 - 20	26	3.31	1.320
33 Decisions on which applications/ systems to buy first are driven by the organisation's needs	21 - 50	48	3.50	1.031
	51 - 200	48	4.13	.606
	Total	122	3.70	1.018
	1 - 20	26	3.12	1.423
34 Decisions on which applications/ systems to buy first are determined by the estimated value	21 - 50	49	3.08	1.057
	51 - 200	48	3.52	.899
	Total	123	3.26	1.100
	1 - 20	26	3.12	1.423

Table C.26			Test Statistics <sup>a,b</sup>									
23 The organis ation does formal strategi c busines s plannin g at the functio nal unit levels with some IT particip ation	24 The organisa tion does formal strategic busines s planning across all the organisa tion's departm ents with IT participa tion	25 The organisa tion does formal strategic busines s planning across all the organisa tion's departm ents with their partners	26 The organis ation does IT strategi c planning across all the functio nal level with Busine ss particip ation	27 The organis ation does IT strategi c Plannin g across all depart ments in the organis ation	28 The organis ation does IT strategi c plannin g across all depart ments in the organis ation with their partner s	29 IT plans are report ed to financi al manag ers e.g. CFO or accou ntant	30 IT plans are report ed to operati onal manag ers e.g. COO or supply chain manag ers	31 IT plans are report ed to senior mana ger busin ess mana ger e.g. CEO, direct or or owne r	32 Applicat ions/ system s are budget ed for	33 Decision s on which applicati ons/ systems to buy first are driven by the organisa tion's needs	34 Decisio ns on which applicati ons/ system s to buy first are determi ned by the estimat ed value	

ChiSquare	13.306	12.674	2.280	12.344	12.593	13.551	9.644	6.495	9.036	8.240	12.186	3.972
df	2	2	2	2	2	2	2	2	2	2	2	2
Asymp. Sig.	.001	.002	.320	.002	.002	.001	.008	.039	.011	.016	.002	.137
a. Kruskal Wallis Test												
b. Grouping Variable: Employees												

1 – 20 vs 51-200

<b>Table C.27</b>	<b>Test Statistics<sup>a</sup></b>
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	23 The organisation does formal strategic business planning at the functional unit levels with some IT participation	24 The organisation does formal business planning across all the organisation's departments with IT participation	25 The organisation does formal business planning across all the organisation's departments with their partners	26 The organisation does IT strategic planning at the functional level with Business participation	27 The organisation does IT strategic Planning across all departments in the organisation	28 The organisation does IT strategic planning across all departments in the organisation with their partners	29 IT plans are reported to financial managers e.g. CFO or accountant	30 IT plans are reported to operational managers e.g. COO or supply chain managers	31 IT plans are reported to senior manager business manager e.g. CEO, direct or owner	32 Applications/ systems are budgeted for	33 Decisions on which applications/ systems to buy first are driven by the organisation's needs
Mann - Whitney U	423.000	452.500	593.000	460.000	500.500	473.500	417.500	487.000	506.000	441.500	423.000
Wilcoxon W	774.000	803.500	944.000	811.000	851.500	824.500	768.500	838.000	857.000	766.500	774.000
Z	-2.552	-2.155	-.514	-2.068	-1.602	-1.912	-2.665	-1.739	-1.544	-2.112	-2.624
Asym p. Sig. (2tailed)	.011	.031	.607	.039	.109	.056	.008	.082	.123	.035	.009
a. Grouping Variable: Employees											



<b>Table C.28</b> <b>Test Statistics<sup>a</sup></b>											
	23 The organisation does formal strategic business planning at the functional unit levels with some IT participation	24 The organisation does formal business planning across all the organisation's departments with IT participation	25 The organisation does formal business planning across all the organisation's departments with their partners	26 The organisation does IT strategic planning at the functional level with Business participation	27 The organisation does IT strategic planning across all departments in the organisation	28 The organisation does IT strategic planning across all departments in the organisation with their partners	29 IT plans are reported to financial managers e.g. CFO or accountant	30 IT plans are reported to operational managers e.g. COO or supply chain managers	31 IT plans are reported to senior manager business manager e.g. CEO, direct or owner	32 Applications/ systems are budgeted for	33 Decisions on which applications/ systems to buy first are driven by the organisation's needs
Mann-Whitney U	743.500	727.000	990.000	677.000	711.500	697.500	876.000	852.000	790.500	849.000	765.000
Wilcoxon W	1968.500	1952.000	2215.000	1758.000	1936.500	1922.500	2151.000	2028.000	2015.500	2074.000	1941.000
Z	-3.482	-3.544	-1.577	-3.466	-3.602	-3.729	-2.594	-2.435	-3.047	-2.656	-3.208
Asymp. Sig. (2tailed)	.000	.000	.115	.001	.000	.000	.009	.015	.002	.008	.001
a. Grouping Variable: Employees											

Table

<b>Table C.29</b>				
		N	Mean	Std. Deviation
35 The Strategic Grid	1 - 20	25	2.80	1.581
	21 - 50	41	2.68	1.234
	51 - 200	38	2.63	1.460
	Total	104	2.69	1.394
36 Strategic alignment model	1 - 20	24	2.58	1.176
	21 - 50	40	2.53	1.176
	51 - 200	37	2.46	1.406
	Total	101	2.51	1.254
37 Strategic alignment maturity model	1 - 20	21	2.57	1.363
	21 - 50	39	2.54	1.189
	51 - 200	37	2.43	1.385
	Total	97	2.51	1.292
38 Achieving and sustaining IT-Business alignment.	1 - 20	23	2.52	1.504
	21 - 50	40	2.48	1.037
	51 - 200	37	2.43	1.425
	Total	100	2.47	1.291
40 The eclectic Approaches to IT and Business Alignment	1 - 20	21	2.71	1.554
	21 - 50	40	2.50	1.086
	51 - 200	36	2.42	1.422
	Total	97	2.52	1.316
41 Extended strategic Alignment model	1 - 20	22	2.50	1.225
	21 - 50	39	2.38	1.042
	51 - 200	37	2.49	1.465
	Total	98	2.45	1.245
42 COBIT Framework	1 - 20	21	3.33	1.354

	21 - 50	40	2.68	1.248
	51 - 200	39	2.97	1.347
				1.320
	Total	100	2.93	
43 IT steering committee	1 - 20	23	2.74	1.251
	21 - 50	35	2.63	1.239
				1.320
	51 - 200	40	2.73	1.263
	Total	98	2.69	
44 IT portfolio management	1 - 20	23	2.96	1.261
	21 - 50	38	2.58	1.130
				1.332
	51 - 200	39	2.74	1.238
	Total	100	2.73	
45 IT governance	1 - 20	23	2.78	1.278
	21 - 50	37	2.76	1.402
				1.303
	51 - 200	42	3.10	1.331
	Total	102	2.90	

### Constructs

Table C.30		N	Mean	Std. Deviation
Communication	1 - 20	25	3.0200	1.16295
	21 - 50	52	3.0361	.83297
	51 - 200	49	3.5838	.64805
	Total	126	3.2459	.88165
Value_measure	1 - 20	26	3.0275	1.06063
	21 - 50	51	3.0289	.76480
	51 - 200	49	3.5394	.61877
	Total	126	3.2271	.81763
Planning	1 - 20	26	3.0143	1.07548
	21 - 50	50	2.9650	.89377

	51 - 200	49	3.6438	.45655
	Total	125	3.2413	.85741

Table C.31		Test Statistics <sup>a,b</sup>		
	Communication	Value_measure	IT Governance	
Chi-Square	11.001	10.008	16.670	
df	2	2	2	
Asymp. Sig.	.004	.007	.000	
a. Kruskal Wallis Test				
b. Grouping Variable: Employees				

21-50 vs 51-200

Table C.32		Test Statistics <sup>a</sup>		
	Communication	Value_measure	Planning	
Mann-Whitney U	753.500	770.500	618.000	
Wilcoxon W	2131.500	2096.500	1893.000	
Z	-3.546	-3.313	-4.254	
Asymp. Sig. (2-tailed)	.000	.001	.000	
a. Grouping Variable: Employees				

Table C.33		Ranks		
	Employees	N	Mean Rank	
MODELS	1 - 20	25	56.00	
	21 - 50	42	52.14	
	51 - 200	39	53.36	
	Total	106		

PRACTICES	1 - 20	23	54.41
	21 - 50	38	49.96
	51 - 200	43	53.72
	Total	104	

**Table C.34**  
**Test Statistics<sup>a,b</sup>**

	MODELS	PRACTICES
Chi-Square	.252	.447
df	2	2
Asymp. Sig.	.882	.800

a. Kruskal Wallis Test

b. Grouping Variable: Employees

**ADDENDUM D: EDITOR'S DECLARATION**

26 July 2017

**TO WHOM IT MAY CONCERN**

This is to confirm that I assisted Mr. Phomolo Motsilili with the language editing of his dissertation '**Alignment of IT and Business Strategies Maturity in Small and Medium-Size Enterprises in the Eastern Cape Province**'. I went through the draft making corrections and suggestions with respect predominantly to language usage and punctuation.



Mrs. Barbara L. Mutula-Kabange

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## ADDENDUM E: ETHICAL CLEARANCE



UNIVERSITY OF  
KWAZULU-NATAL  
INYUVESI  
YAKWAZULU-NATALI

24 November 2017

Mr Phomolo Mosisili (208528117)  
School of Management, IT & Governance  
Pietermaritzburg Campus

Dear Mr Mosisili,

Protocol reference number: HSS/0958/015M  
New Project Title: Alignment of IT and business strategies in Small and Medium- size enterprises in the Eastern Cape Province

Approval notification – Amendment Application

This letter serves to notify you that your application for an amendment dated 8 November 2017 has now been granted Full Approval as follows:

- Change in Title

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

Best wishes for the successful completion of your research protocol.

Yours faithfully

  
Dr Shamila Naidoo (Deputy Chair)  
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Mr Karunakaran Naidoo  
Cc Academic Leader Research: Professor Brian McCarthy  
Cc School Administrator: Ms Debbie Cunyngname

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Humanities & Social Sciences Research Ethics Committee  
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Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)

 1950 - 2018  
169 YEARS OF ACADEMIC EXCELLENCE

- Founding Colleges:  Durban College  Edgewood  Howard College  Mkandeni College  Pietermaritzburg  Westville